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An Address
ON
ACUTE INTESTINAL OBSTRUCTION.

*Delivered before the Medical Society of London on Feb. 25th**

BY A. H. BURGESS, M.B., M.SC. MANCH., F.R.C.S. ENG.,
SURGEON TO THE MANCHESTER ROYAL INFIRMARY; PROFESSOR OF SURGERY IN THE UNIVERSITY OF MANCHESTER; AND PRESIDENT-ELECT OF THE BRITISH MEDICAL ASSOCIATION.

THE acute abdominal crises have always especially interested me, and I am rather concerned to find that it appears to be the custom in London to describe these under the designation "the acute abdomen." I hate that term, and I never hear it without experiencing an almost irresistible desire to immediately confer upon its user an "acute traumatic buttock"—the two terms are about on a parity of inelegance.

ITS HIGH MORTALITY.

The present century has witnessed great improvements in the results of the surgical treatment of abdominal crises, but this improvement has not been obtained equally in the various groups. At the Manchester Royal Infirmary our mortality for acute appendicitis in 1924 was one-twelfth and that for gastro-duodenal perforations one-seventh of that of 1900, whereas that for acute intestinal obstruction was still one-half that of 1900. The best recent series of statistics on acute intestinal obstruction is that which was compiled by Mr. H. S. Souttar for the Bath meeting of the British Medical Association in 1925. He collected the statistics of the five years, 1920–24 inclusive, of seven large hospitals (three in London—Guy's, St. Thomas's, St. Bartholomew's; three in the provinces—Newcastle, Manchester, and Bristol; and the Belfast Royal Infirmary (see table). I hope Mr. Souttar will compile a further series from the same hospitals for the five-year period, 1925–29 inclusive, and present a comparison of the results at Winnipeg in 1930. In adopting Mr. Souttar's figures I wish to modify them by excluding all cases of strangulated hernia and of idiopathic intussusception, my reason being that I wish to-night to consider only those cases of acute intestinal obstruction the diagnosis of which is not readily obvious. There is, nowadays, no excuse for overlooking obstruction from strangulated hernia or intussusception; moreover, the latter is not primarily an obstruction, and, indeed, as pointed out by MacLennan, of Glasgow, the object of early diagnosis and treatment is to prevent an intussusception becoming an obstruction, just as we wish to prevent an acute appendicitis from becoming a peritonitis. Excluding hernia and intussusception, therefore, we are left with 1042 cases with 395 deaths, a mortality of 37·9 per cent.; this is the real mortality of acute intestinal obstruction the cause of which is not readily obvious, and it is this high mortality which we are out to reduce. In Manchester, I am pleased to say, this mortality is tending to diminish; thus at the Royal Infirmary our mortality for the ten-year period 1913 to 1922 was 41·07 per cent., for 1920–24 (the period covered by Mr. Souttar's table) 33·5 per cent., and for 1925 to 1927 (the last year for which we have the reports fully analysed) only 30·2 per cent.

What is the reason for this high mortality? The main reason is delay in the application of surgical treatment. The early diagnosis of acute intestinal obstruction has not kept pace with the improvements in the diagnosis of the other groups of abdominal crises; too many cases still present themselves with distended abdomens and advanced toxæmia. The early signs are not sufficiently insisted upon in the surgical text-books, except the most recent ones, in which, I am pleased to say, there is a decided improvement. Far too much emphasis is usually laid upon fæcal vomiting as a sign of acute obstruction; it should not be regarded as a sign but rather as an end-result. Such emphasis rather encourages the waverer to await fæcal vomiting to complete the clinical picture. The only hand, however, that ever paints a complete pathological and clinical picture of any morbid state is the hand of Death. The man who waits for fæcal vomiting will practically never make a mistake in diagnosis, but rarely, if ever, will he save his patient. Far better for the community in general would it have been had the original advent into this world of such a would-be infallible diagnostician been in itself a perfectly complete clinical picture of the process of stillbirth.

DIAGNOSIS.

Acute intestinal obstruction may be either primary, coming like a "bolt from the blue," or secondary, being engrafted upon the subacute or chronic obstruction. In distinguishing between primary and secondary obstruction there are two important clinical guides. In secondary obstruction we can frequently see (1) the outlines of individual dilated coils, and (2) visible peristalsis passing along them. Sudden acute obstruction always leads to dilatation with thinning of the wall, and is not associated with visible peristalsis. Where the abdominal wall is extremely thin—as in the emaciation following typhoid fever, or in the thinned-out coverings of a ventral hernia, or a divarication of the recti muscle—it may be possible to see visible peristalsis in the absence of any obstruction; but this visible peristalsis is in normal-sized coils and is no exception to the rule that whenever the outlines of individual *dilated* coils can be seen, together with a peristaltic wave passing along them, it is quite safe to diagnose intestinal obstruction of at least several weeks' duration. Even when peristalsis is not visible it may be "palpable"; by keeping the hand flat upon the abdomen the underlying coil may be felt to alternately harden and soften, much like the pregnant uterus.

Primary acute intestinal obstruction varies considerably in its acuteness of onset, being especially acute in internal strangulation, volvulus, and acute intussusception—all conditions in which there is not only an obstruction to the onward passage of the fæcal stream, but also, of much greater importance, to the circulation of the bowel concerned. Fæces may be arrested for days or even weeks but no patient can long survive a complete arrest of the circulation of the bowel. The acuteness of onset depends upon (*a*) the degree of associated strangulation, and (*b*) the site of the obstruction. In general terms the higher the obstruction the more acute the onset, although an exception to this will be recalled in the case of volvulus of the sigmoid colon, the onset of which is extremely acute, probably from the large amount of mesentery involved. The early symptoms of acute primary intestinal obstruction are common to those of any other acute abdominal crisis; they are the symptoms which, years ago, were described by Sir Frederick Treves as "peritonism." They are of reflex origin and have no localising value whatever. In acute intestinal obstruction the pain is always referred to the epigastric region, and I have never known it have any localising value. Often paroxysmal at first, it becomes continuous as the obstruction becomes complete. The vomiting, like the pain, is at first reflex and depends upon the acuteness of onset much more than upon the site of obstruction; later vomiting is due to the mechanical obstruction and appears earlier the higher its site, being most marked in acute dilatation of the stomach (from compression of the third portion of the duodenum) and in gall-stone impaction in the upper jejunum; in low obstruction, as from carcinoma of the rectum, vomiting may be absent throughout. At first the vomit consists of gastric contents, later it becomes bilious, and later still, brown and fæculent

* This meeting was reported in THE LANCET, March 2nd, p. 441.

in odour, constituting the so-called stercoraceous or fæcal vomit. True fæcal vomit—i.e., the vomiting of actual fæces—never occurs in intestinal obstruction but only in cases of gastro-colic fistulæ (although cases have been recorded as having occurred in functional nervous disease). The persistence of the vomiting is its chief characteristic. The cessation of the passage of fæces and flatus may not be absolute at first, and one, or even two, enemata may bring away fæces present in the bowel below the site of the obstruction. Such does not, however, give any relief to the symptoms.

Distension of the coil above the site of obstruction must, of course, be present in every case, but it is not always visible. If the case be seen early the distension may be localised, and may prove a valuable guide to the site of obstruction; soon, however, the distension gets uniform and separate coils cannot be distinguished. The degree of distension varies inversely with the vomiting—in high obstruction vomiting is marked with very little distension, in low obstruction the converse obtains. The central distension of small intestine obstruction contrasts with the barrel-shaped abdomen (from distension of the flanks) of sigmoid obstruction. In volvulus of the sigmoid distension comes on extremely rapidly and is intensely marked, the abdomen appearing as if it were about to burst; this distension, be it noted, is in the twisted loop itself and not in the bowel above the volvulus. Steadily progressive abdominal distension is one of the most important signs of intestinal obstruction. Abdominal palpation may sometimes reveal the presence of a tumour in acute intussusception and in malignant disease, and I have twice felt large gall-stones, and in a third case what I took to be a gall-stone, but which proved to be a large hair-ball from the stomach. Auscultation is a much neglected method of investigation, and one to which I attach much value. After a little experience one gets to recognise certain sounds associated with distended intestines, and the contrast between the turbulent gurgling sounds of mechanical obstruction and the deathlike silence of paralytic ileus is very marked.

Rectal examination is of the greatest importance. In some cases the cause of the obstruction itself can be detected, as in stricture or growth of the rectum, or an intussusception may be felt. Sometimes through the anterior wall of the rectum a growth of the sigmoid can be discovered, or the presence of dilated coils of small intestines in the pelvis definitely ascertained. Sometimes "ballooning" of the rectum, so suggestive of sigmoid obstruction, can be felt. Wherever there is any reason to suspect the colon as the site of the obstruction a sigmoidoscopic examination ought to be made. The sigmoidoscope can be passed from 8 to 11 inches, and from a negative point of view it is often valuable to be able to say that there is no obstruction within that distance.

TABLE ILLUSTRATING MR. H. S. SOUTTAR'S REPORT ON ACUTE INTESTINAL OBSTRUCTION. COMBINED STATISTICS FROM SEVEN HOSPITALS.

Cause.	Age decade.								Site.				Duration in days.					Operation.					Result.			
	1	2	3	4	5	6	7	8	Small intestine.	Right colon.	Left colon.	Rectum.	½	1	2	4	+	Reduction.	Enterotomy.	Enterostomy.	Anastomosis.	Resection.	Lived.	Died.	Totals.	Mortality (per cent.).
Gall-stones	—	—	—	—	1	7	15	5	26	—	2	—	—	—	3	10	12	—	25	3	—	—	14	14	28	50
Carcinoma	—	2	7	31	52	114	110	41	2	46	246	54	1	12	51	46	121	—	—	313	48	37	202	156	358	43·5
Adhesions	29	72	65	52	49	29	27	15	308	23	10	2	9	67	88	61	59	283	—	—	36	20	235	10	342	31
Internal strangulation	17	42	34	31	25	27	25	11	211	6	6	—	13	38	50	28	17	134	—	27	32	33	149	74	223	33
Intussusception (idiopathic)	577	14	7	9	5	2	—	—	526	100	14	—	130	173	91	37	24	544	2	13	48	58	476	137	613	22
Intussusception with tumour	8	3	—	1	2	2	1	—	15	—	2	—	—	2	3	1	4	13	4	2	2	9	11	6	17	35
Volvulus	2	6	11	10	12	18	11	4	39	18	20	—	3	10	12	11	9	47	3	17	12	18	36	38	74	51
Total (excluding hernias)																							1123	532	1655	32·1
Inguinal hernia	31	33	37	54	82	17	104	65	457	31	13	Om. 29	70	101	74	44	41	501	2	11	27	34	451	83	534	16
Femoral hernia	2	3	27	83	157	148	175	97	537	5	4	29	128	127	99	66	82	618	1	14	55	57	557	118	675	20
Umbilical hernia	—	—	5	4	28	76	68	19	159	36		12	8	23	30	29	35	170	1	14	27	33	129	71	200	35
Total hernias																							1137	272	1409	19·3
Grand total																							2260	804	3064	26·2

Om = Omental.

	Cases.	Deaths.	Mortality (per cent.)
Mortality (excluding hernia and idiopathic intussusception)	1042	395	37·9
Mortality of hernia and intussusception combined	2022	409	20·22

THE SITE AND NATURE OF OBSTRUCTION.

In the absence of any guide, such as a tumour palpable through the abdominal wall, or per rectum, or the presence of a local distension only, the most important step is to distinguish between small and large bowel obstruction. As regards relative frequency Souttar's list (excluding hernia and intussusception) indicate 586 cases of small (57·6 per cent.) to 433 of large (42·4 per cent.) intestine obstruction—that is, the chances are slightly more in favour of small than of large bowel obstruction. The Manchester Royal Infirmary figures show a preponderance of the large bowel, but taking all cases together we may assume that obstruction (excluding hernia and intussusception) is fairly equally divided between the small and the large bowel. A previous medical history of intestinal troubles before the onset of acute obstruction is much more in favour of the large intestine being concerned, since 91 per cent. of obstructions in the colon are due to carcinoma, and this usually produces some previous disturbances, such as colicky pains after meals, often travelling up to and becoming arrested at the same spot, frequently associated with borborygmi, sometimes audible to others, attacks of diarrhœa alternating with constipation, slight attacks of flatulent distension which pass off, and large quantities of mucus in the stools, sometimes even blood-stained. The keynote of the position, however, is the condition of the cæcum—

if this can be seen to be distended or the site of visible peristalsis or, failing this, if palpable peristalsis can be discovered on careful palpation then the obstruction must be in the colon distal to the cæcum.

If the obstruction can be located to the large intestine there is a 91 per cent. chance of its being of a malignant nature—that is, roughly a 9 to 1 chance. On the other hand, if the large intestine can be excluded as the site of the obstruction, then the odds are nearly 300 to 1 against malignancy (out of 586 cases of small intestinal obstruction only two were due to malignant growth); 88 per cent. of small intestine obstructions are due to adhesions or internal strangulations.

TREATMENT.

I refer here only to the treatment of mechanical obstruction, leaving the very interesting subject of post-operative paralytic ileus for consideration by those who follow me. Operative treatment is essential for mechanical obstruction. Accessory forms of treatment may be very useful in conjunction with operation especially—(1) gastric lavage; (2) the introduction of large amounts of hypertonic saline solution subcutaneously or intravenously so as to replace the great loss of fluids and of chlorides from the blood; (3) the administration of antigas-gangrene serum (B. W. Williams); and (4) enemata of bile, as advocated by R. St. L. Brockman, of Sheffield.

The nature of the operation will depend upon the stage of the disease. In *early* cases, with little distension and good general condition, an exploratory laparotomy is undertaken on the usual lines, the only points I would specially stress being the importance of preliminary gastric lavage and the use of spinal anæsthesia (especially Dr. George P. Pitkin's method of controllable spinal anæsthesia). Having discovered the cause of the obstruction, removal, short circuit or artificial anus proximal to the obstruction should be carried out in this order of preference. It is with the *late* cases, with general abdominal distension and poor general condition, that difficulties arise in deciding what is best to be done. With care I think it is possible in most cases to know whether the obstruction is in the large or the small intestine. If it can be located to the colon I feel strongly that one should content oneself for the time being with a blind cæcostomy, carried out under local anæsthesia or under nitrous oxide gas, through a gridiron incision in the right iliac fossa. This will relieve the obstruction. I am well aware that this measure gives one no information as to the exact site or nature of the obstruction, as to the presence of any secondary deposits in the glands, peritoneum or liver, or whether it is capable of removal at some future date, or, failing this, whether short-circuiting is possible. All this information is, of course, essential before the case is finally disposed of; none of it, however, need necessarily be known at the time of the cæcostomy, and it is far better to tide the patient over the immediate necessity (that is, the relief of the obstruction) and not to attempt to acquire this information for the moment. All of it can be much more safely obtained when the obstruction has been removed by cæcostomy. The only serious objection to blind cæcostomy is the risk that the obstruction in the colon may be some form of internal strangulation, so that although the cæcostomy relieves the obstruction the strangulation, not being relieved, would result in perforation and peritonitis. The Manchester Royal Infirmary statistics show that the risk of such strangulation in the colon being overlooked at a blind cæcostomy is at the most 1·5 per cent., and I think even the most optimistic advocate of preliminary exploratory laparotomy must admit that it would add more than 1·5 per cent. to the mortality of blind cæcostomy.

If, however, one cannot, before operation, locate the obstruction to the colon then a right paramedian exploratory laparotomy must be performed, and the condition of the cæcum definitely ascertained. If distended I would, without any further exploration, advocate immediate blind cæcostomy, either through the original wound, if the cæcum will come readily up into it, or, as in most cases, after rapidly closing up the laparotomy wound, I would perform a blind gridiron cæcostomy. If the cæcum is found collapsed then the hernial orifices are rapidly examined from within, a collapsed coil of ileum is picked up from the right-hand side of the bottom of the pelvis, and is traced upwards to the site of the obstruction. It may be inquired, since I advocate blind cæcostomy as the method of choice for these late cases of obstruction of the colon, why do I not advocate blind enterostomy for obstruction in the small intestine. The difference is one of the relative frequency of the presence of strangulation. As I have shown, in the case of the large intestine after relief of the obstruction by cæcostomy, the risk of an unrelieved strangulation remaining undiscovered is at most 1·5 per cent. An analysis of Souttar's statistics shows that in the case of the small intestine, even after relief of the obstruction by an enterostomy, the risk of unrelieved strangulation remaining would be at least 42·6 per cent.

ENDOCARDITIS LENTA.*

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THE name "endocarditis lenta" has never really become popular, though it well describes the more chronic forms of infective endocarditis. It was first used by Schottmüller in 1910 and applied to five cases of subacute infective endocarditis due to the *Streptococcus viridans* seu *mitior* (named from the green colour of the culture on blood-agar and its feeble hæmolytic powers), an organism which he had isolated in 1903. Later writers used the term to describe cases of subacute or chronic endocarditis due to any organism except that of rheumatism, and it is so used in the present paper.

Osler, in the Goulstonian lectures for 1885, drew attention to the more chronic forms of infective endocarditis, while Jaccoud recognised the condition at about the same time (1883), and later French writers refer to "le type Jaccoud-Osler" (Fiessinger et Janet 1920). In 1908 Osler and Horder described very fully the clinical aspects, but the disease was somewhat rare until the war of 1914–18 when many cases were seen in soldiers, especially those who served on the Western front (Curschmann, 1922, Wauchope, 1925).

The present paper is based on 200 cases taken from the London Hospital records. Of these 131 were verified by autopsy; in the remainder a time basis has been employed to divide them from cases of acute infective endocarditis, no case being included in which definite symptoms of the illness were present for less than three months.

Ætiology.

The ætiology is obscure, but various predisposing factors are recognised.

TABLE I.—*Congenital Malformations of the Heart.*

Complete transposition of the heart and other viscera	1
Patent septum membranaceum	1
Four cusps to pulmonary valve (infective endocarditis of mitral valve only)	1
Bicuspid aortic valve (one case associated with coarctation of the aorta)	5

1. *Previous Heart Disease.*—(*a*) Congenital lesions. It is well known that infective endocarditis often supervenes on gross congenital malformations; recently attention has been drawn to the influence of the bicuspid aortic valve in predisposing to endocarditis lenta (Lewis, 1923, Horder, 1926, Wauchope,

* A paper read before the Brighton and Sussex Medico-Chirurgical Society.

1928). The congenital lesions found in the London Hospital cases are shown in Table I.

(*b*) Acquired valvular disease. Syphilitic aortic endocarditis was present in only one of these cases, and is not considered a predisposing factor. Rheumatism is, however, of great importance, and the earlier writers, especially, e.g., Osler (1908), Horder (1908), and Schottmüller (1910), lay stress on the observation that more than half the cases had previous rheumatic cardiac lesions. Blümer in 1923 collected 330 cases from the literature and found a history of rheumatism in 140, of chorea in 10, and of tonsillitis in 18, the three together making over 50 per cent. In ex-Service men the proportion with previous rheumatism was less. Cotton, for instance, found a history of rheumatism in 29 per cent. of warpensioners. Morawitz (Würzburg) found it in 3 out of 17 ex-soldiers and Starling found rheumatic scarring in 1 only out of 13 autopsies. Histories are notoriously unreliable and everyone has seen cases of young people who had definite signs of mitral stenosis and yet denied having had any illness compatible with a diagnosis of acute rheumatism. On the other hand, post-mortem evidence is not conclusive because the extreme fibrosis and destruction of valves found in long-standing cases of endocarditis lenta may obscure the evidence of a previous rheumatic lesion. It is probably for this reason that most observers rely on the history, and although a negative history is worthless an analysis of the London Hospital patients who stated that they had had rheumatism, set out in Table II., may be of interest.

TABLE II.—*History of Rheumatic Fever or Chorea.*

—	Cases of endocarditis lenta.	Cases with history of rheumatism.	Percentage with history of rheumatism.
Civilian males ..	93	49	52·6
Ex-soldiers ..	40	9	22·5
Females	67	38	56·7
Total	200	96	48·0

In 17 males (none of them soldiers) and 11 females the heart was known to have been affected by a previous attack of rheumatism, while 8 males and 3 females said they had had "heart trouble" but no rheumatism. This gives percentages of 18·8 in all males and 20·9 in females who were known to have had a cardiac lesion before the onset of endocarditis lenta.

2. *Factors Connected with Army Service.* — Since previous heart disease was not an important predisposing factor in soldiers other causes have been suggested; wounds and infections (Cotton, 1920), lowered resistance due to fatigue (Coombs, 1923) or the strain of carrying a heavy pack (Murray and Lougheed, 1921). All observers agree that the disease occurred in strong healthy men of about 35 years of age who had withstood long service, generally in France.

Of the 40 London Hospital patients who had been in the army 30 at least served in France and the histories of the majority point to long and strenuous service; 15 had been wounded and 11 gave a history of some febrile condition such as trench fever, influenza, septic poisoning.

3. In women *childbirth* may be the starting-point of the disease. Four of the patients in this series were confined 18, 13, 10, and 7 months before death; in one the labour was said to have been difficult. A fifth miscarried four months before death, but this was probably the result of the illness, although the symptoms dated from the miscarriage.

4. In two patients *wholesale extraction of septic teeth* seemed to give rise to the infection, and I have seen another case since in which this sequence appeared clear.

The Infecting Organism.

This, in the majority of cases, is a short-chained non-hæmolytic streptococcus, the *Streptococcus viridans*. Libman (1923) states that 95 per cent. of cases are due to this organism, the remainder being nearly all due to Pfeiffer's bacillus. Blümer (1923) gives the following results from an analysis of the literature of 304 cases of infective endocarditis lasting for more than three months:—

Streptococcus	248*	Staphylococcus	8
Pneumococcus	16	Gonococcus	1
Bacillus influenzæ ..	16	Other organisms ..	15†

* Of which 169 were *S. viridans*. † Including 7 unclassified.

In 110 of the London Hospital cases an organism was identified before or after death, of which 73·6 per cent. certainly, 84·5 per cent. probably, were streptococcal (Table III.).

TABLE III.

Organisms identified.	Cases.	Organisms identified.	Cases.
Streptococcus	81	Unspecified Gram-positive cocci in culture ..	3
Staphylococcus	6	Gram-positive cocci in films	9
Pneumococcus	4		
Gonococcus	2		
Micrococcus catarrhalis ..	2		
Bacillus influenzæ ..	3	Total	110

Prof. H. M. Turnbull has pointed out to me that the above table cannot be accepted as giving the organisms responsible for the endocarditis lenta in individual cases. The organisms cultivated before or after death are not necessarily the cause of the endocarditis lenta. Microscopic sections are essential in determining the organism responsible for this peculiar kind of endocarditis. When only one kind of organism has been found within the valves in microscopic sections it has been found in almost all cases to be an extensively degenerated, Gram-positive streptococcus, presumably *S. viridans*, grouped in large masses; but in a few cases Pfeiffer's *B. influenzæ* or the gonococcus has alone been found. The cases in which the gonococcus or *B. influenzæ* was alone found were clinically in the length of their course less sharply differentiated from examples of acute infective endocarditis than were the other examples of endocarditis lenta. When organisms such as pneumococci and staphylococci had been cultivated, the sections of the valves showed the characteristic large masses of degenerated streptococci in addition to the pneumococci or staphylococci. That these latter organisms were not the cause of the endocarditis but a secondary infection was shown by their relative sparsity, by their limitation to the surface of the vegetations, or their presence within new vessels formed during the chronic inflammation of the valve, and by their being surrounded by a purulent reaction, which is not found in pure endocarditis lenta. Similar findings and conclusions were arrived at independently and have been published by Wright in an important paper (1925).

Secondary pneumococcal infection is frequently the result of a terminal pneumonia. This was true of two of the four cases in the above table, the pneumonia in one case being complicated by pneumococcal bacteriæmia and meningitis. In other respects the pneumococcal cases were similar to the cases of streptococcal endocarditis lenta.

The six staphylococcal cases also differed in no way in their clinical course from the cases of streptococcal infection, and this confirms the conclusions drawn from post-mortem appearances that these organisms are a terminal infection supervening on a streptococcal endocarditis. All the patients were men. One case was observed for eight months, another for over five, and another was a typical chronic case in a soldier lasting for a year. Staphylococci in pure culture were grown from the blood during life in all six cases; in one the culture had been sterile four days previously.

The two cases due to the gonococcus followed the usual course of gonococcal endocarditis and were both clinically and pathologically more subacute than chronic. Both occurred in women.

The first case, an unmarried girl of 20, was admitted to hospital early in November, 1922, with a tubo-ovarian abscess and pyosalpinx (found at laparotomy) and was observed till her death three and a half months later. The temperature never settled after the operation though the wound healed satisfactorily; a mitral murmur appeared in December and the blood culture grew gonococci in January, a month before death. The diagnosis was verified at autopsy, the mitral valve only being affected.

In the second case, a married women of 40, the illness ran a more chronic course and lasted for five months. There was no history of the original infection, but her husband had had gonorrhœa three years before, and though treated suffered from gleet. The illness began with symptoms of heart failure, and for the last six weeks of life the temperature was irregular and remittent, rising to a maximum of 103° F. Gonococci were cultured from the blood a week before death. The aortic, mitral, and tricuspid valves were covered with typical vegetations and the other post-mortem findings were those of endocarditis lenta.

Two of the three cases due to *B. influenzæ* were of six months' duration and in both the blood culture was sterile during life, but the organism was isolated after death. One of these patients died from cerebral embolism. The course of the third influenzal case was less chronic, three months in duration, with a remittent temperature reaching 103° F. The organism was twice cultured from the blood during life. Both the *M. catarrhalis* cases were febrile, one associated with rigors; in both emboli occurred and in both the blood culture was positive.

The more chronic the course of the illness the more often is the blood culture sterile. Libman (1925) distinguishes a bacteria-free stage in which the blood cultures are sterile and the vegetations at autopsy show few or no bacteria. Wright (1925) has shown that growth in blood cultures occurs even if the organisms are present in very small numbers, though in cases of streptococcal endocarditis it is often delayed. He pointed out that bacteriæmia is secondary and is due to the escape of organisms from the valves and that in the non-bacteriæmic cases the organisms are either dead or are prevented from reaching the blood stream by thrombus material. This non-bacteriæmic stage corresponds to the chronic type of the disease found in soldiers (Wauchope 1925). Among the 26 cases in soldiers in this series, where a culture was made, in four only (15·4 per cent.) was it positive, while in the 114 civilian cases examined it was positive in 68·4 per cent. In six only of the sterile civilian cases an organism was identified from the vegetations on the valves, but in seven of the soldiers.

Incidence.

The *sex-incidence* was altered by the war cases. Earlier writers note that the sexes were almost equally affected—e.g., Osler and Horder in 1908. Schottmüller in 1910 records 3 males to 2 females. Blümer in 1923 in the literature found 197 males to 131 females, a proportion of 3 to 2. The war brought a preponderance of males, especially in the chronic cases. In this series there were 133 males and 67 females, about 2 to 1, while in cases of over six months' duration the proportion was 3·4 to 1.

TABLE IV.—*Age-incidence of the London Hospital Patients.*

Age	10 to 19.	20 to 29.	30 to 39.	40 to 49.	Over 50.
Males	15	54	31	23	9
Females	10	32	14	10	2
Total	25	86	45	33	11
Percentage	12·5	43	22·5	16·5	5·5
Soldiers	—	16	15	8	1

Age-incidence.—The greatest number of cases occur in the decade between 20 and 30, the next in that between 30 and 40 (cf. Horder, 1908, Blümer, 1923). Of the London Hospital cases 65·8 per cent. occurred in patients between 20 and 40 (see Table IV.). In Osler's cases the men were older than the women, and this was the case at the London Hospital, where of the men 47 per cent. were over 30 while of the women 38·8 per cent. were over 30. The disease seems to be more chronic in older patients, and it is significant that in soldiers in whom the chronic type was seen so often, 60 per cent. were over 30. Becher (1921), Cotton (1920), and Curschmann (1920) record similar experience.

Initial Symptoms.

The onset is usually insidious and gradual, but in a few cases the patient is apparently well until, with dramatic suddenness, an embolus occurs. This happened to 11 of the patients in this series. Examples: A man of 41 had a left hemiplegia while serving with the army in France, another while playing billiards. A third, aged 25, was found semi-conscious on Epsom Downs on June 2nd, 1920; the more usual causes of this condition on Derby Day were excluded and a diagnosis of infective endocarditis with right hemiplegia was established. The patient had a second cerebral embolus on Nov. 14th and died the next day. In a fourth case the first symptom was sudden blindness of the left eye due to an embolus of the central artery of the retina. Three patients died within a few hours of the first embolus; the notes of one case, a woman of 28, record "stooping down to unlace boots, fell down, brought in dead."

A study of the histories shows that there are four principal groups of symptoms by which the disease first shows itself—viz.: (1) symptoms referred to the heart; (2) symptoms of rheumatism; (3) symptoms of a febrile illness; and (4) symptoms of indefinite ill-health.

(1) *Cardiac.*—The first symptoms are those of chronic heart failure; the infective attack which brought about the damage to the heart has passed unnoticed. The patient complains of increasing breathlessness, cough, swelling of the feet; "pains over the heart," and occasionally palpitations are mentioned.

(2) *Rheumatic.*—The patient, who may or may not have had acute rheumatism before, has a definite feverish illness accompanied by painful joints. This does not subside when salicylates are given in full doses and eventually the diagnosis is revised. Some cases are less definite and pain in the limbs or in one particular joint is an incident in a general feeling of discomfort.

(3) *Influenzal or Febrile.*—The history is given that the patient had an attack of "influenza" some months or weeks previously and has not been well since; sometimes it is a "chill," or a "bad cold" from which the patient only partially recovers. In other cases a sudden attack of fever or shivering ushers in the final phase of the illness and causes the patient to seek treatment.

(4) *Indefinite Ill-health.*—The patient suffers from general malaise, weakness, and wasting, which continue and increase for several months. Feeling "queer," "run down," "sleepy," "languid," "out of sorts," are expressions used. One patient complained of feeling irritable. Headache, loss of energy, and insomnia are common; loss of weight is often mentioned, but there are no localised symptoms.

(5) The next most common group of cases is that in which *abdominal pain, vomiting*, and *diarrhœa* announce the presence of the illness. Sudden pain in the back recorded in four cases may be due to embolism.

The relative frequency with which the various initial symptoms were found is shown in Table V.

When the patient comes under observation the clinical picture is usually quite definite. He is pale and breathless on exertion and there may be œdema of the feet. The temperature is irregular, the heart considerably enlarged, particularly to the left, and there are loud murmurs generally at both mitral and aortic areas. One or more of the following characteristic signs are present: palpable spleen, clubbing of the

fingers, purpura, Osler nodes and other signs of embolism; last, and most important, is albuminuria, sometimes with hæmaturia and the presence of casts.

TABLE V.

Mode of onset.	Cases and Per cent.	Mode of onset.	Cases and Per cent.
Cardiac symptoms	54 (27)	Purpura 5 Hæmaturia 1	6 (3·0)
Pains in the joints and limbs	39 (19·5)	Sudden pain in back or neck	4 (2·0)
Febrile illness	35 (17·5)	Cough	3 (1·5)
Malaise and weakness	21 (10·5)	"Pleurisy"	3 (1·5)
Abdominal symptoms	14 (7·0)	Fainting and "collapse"	3 (1·5)
Cerebral embolus and hæmorrhage 10 Embolus of arteria centralis retinæ 1	11 (5·5)	Renal symptoms	2 (1·0)
		Unclassified	5 (2·5)
			200

Clinical and Pathological Features.

Perhaps it will be useful to consider in detail some of the more important clinical aspects of the disease, correlating them where possible with the pathological foundations.

1. The *general condition* of the patient is generally better than would be expected in so serious and long-continued an illness, and the symptoms are less evident than the physical signs. Euphoria is characteristic and the patients have none of the restlessness and anxiety associated with other cardiac conditions, but in spite of breathlessness, fever, or partial paralysis continue placid and contented with a firm belief in their ultimate recovery.

A man of 39 came to the hospital because his feet had swelled and he could not get his boots on. The disease was well advanced and he was told he was very ill, but after six weeks, as the swelling of the feet subsided with rest in bed, he went at his own request to a convalescent home and then returned to his work as a fish porter in Billingsgate Market—heavy work for a man with a failing heart, grossly enlarged spleen, nephritis, and fever. He continued for three months, getting up at 5 A.M. and going to bed in the afternoon as soon as his work was over. Even when he was obliged to return to hospital, where he spent the last three months of his life, he had a feeling of well-being and remained hopeful.

2. The *temperature* is irregular and is rarely of the remittent "septic" type associated with acute infective endocarditis. In the more chronic cases there are often long periods of apyrexia; one man was observed for six weeks with 99° F. as the maximum, and the only reaction after an injection of antistreptococcal serum was a rise to 100° F. Such cases are practically afebrile, but as most of the patients in this series were under observation in the later stages of their illness when fever is more common there was no instance in which the disease was observed for 14 days or more without an occasional rise to at least 99° or 100° F. In many of the less chronic cases the temperature occasionally rose to 102° or 103° F.; in others it was remittent with a maximum of 103° F. for a few days or a week and then fell irregularly; a rise to 104° F. was rather unusual. The irregularity of the fever is its main characteristic.

3. The *heart* is nearly always regular in its action and the rate of the beat is relatively slow in spite of two causes for acceleration—viz., heart failure and a streptococcal septicæmia. The rate in the chronic cases was about 70–90 per minute for weeks together, and often failed to rise in occasional attacks of pyrexia. In the subacute cases, when the temperature rose to 102° or 103° F., the pulse-rate was rarely over 120. Sometimes, but by no means always, it became rapid shortly before death. The heart is considerably enlarged to the left; loud murmurs are usually heard both at the mitral and aortic areas; signs of heart failure—œdema, ascites, and breathlessness—develop. Libman (1923) noted sternal tenderness in some of his cases, particularly late in the disease.

The *post-mortem appearances* of the heart correspond with the clinical findings.

(*a*) Hypertrophy of the cardiac muscle is constant, and the distribution in any case is compensatory to the particular interference with valvular function. Microscopic myocardial lesions are not uncommon and are embolic in origin; larger infarcts and areas of fibrosis are rare (Coombs 1921). In this series infarction or fibrosis occurred in 31 cases. (Table VII.)

(*b*) Pericarditis almost never occurs, but the remains of an extensive pericarditis due to rheumatism is sometimes found, whilst milk spots and fibrous tags, probably due to rheumatism, are extremely common.

(*c*) The endocarditis is a pure endocarditis, in contrast to rheumatic carditis where pericardium, myocardium, and endocardium are usually all affected. The mitral and aortic valves are generally both involved—in 63 per cent. in a series of 119 cases—though one valve alone or three or even all four may be attacked; the aortic valve is more often affected in endocarditis lenta than in rheumatism (Wauchope, 1928). It is noteworthy that in the seven cases due to the gonococcus, *B. influenzæ*, and *M. catarrhalis* the distribution of the endocarditis was rather different from that found in the streptococcal cases; the mitral valve was affected in each case; alone in five; the mitral severely and the aortic slightly in one (*B. influenzæ*); the mitral, aortic, and tricuspid in one (gonococcal). The affected valves are covered with polypoid vegetations, fibrinous and tough at the base, and in the more chronic cases impregnated with small particles of calcium. There is usually much destruction and considerable fibrosis of the valves. The mural endocardium adjacent to the affected valve is often involved. Mural endocarditis of the left auricle is frequent, and it is common to find endocarditis of the aortic cusps spreading on to the endocardium of the left ventricle.

4. *Kidneys.*—Albuminuria is the most constant clinical feature to be associated with the cardiac signs and pyrexia. It occurred in over 80 per cent. of these cases (see Table VI). In the majority it was due to nephritis which was present in 64 per cent. of the cases which came to autopsy; sometimes albuminuria was associated with back pressure kidney or simple parenchymatous degeneration. Hæmaturia, visible to the naked eye or microscopic, was noted in 43 per cent. of the cases; it may be due to nephritis when it is often associated with casts; to infarction, when it is temporary, or to purpura when it is profuse.

TABLE VI.—*Clinical Observations (excluding Cardiac Conditions).*

	Cases and Per cent.		Cases and Per cent.
Albuminuria	152 (81·7)*	Clubbing of the fingers	71 (35·5)
Hæmaturia	86 (46·2)*	Purpura	59 (29·5)
Palpable spleen	109 (57)†	Osler nodes	16 (8·0)
Gross embolism	99 (49·5)		

* 14 cases not tested. † 10 cases notes defective.

The nephritis is of two types: (1) A hæmorrhagic nephritis characterised by the so-called "focal embolic glomerular necrosis" of Löhlein (1910). It was described by Baehr (1912 and 1921), who studied the microscopic appearances of the kidneys and found this type of nephritis in subacute streptococcal endocarditis, but not in cases of endocarditis due to other organisms. (2) A diffuse hæmorrhagic nephritis without "focal necrosis" is present in other cases. Death from uræmia is a not uncommon termination.

5. *Spleen.*—Enlargement of the spleen is frequent and is an important diagnostic point. In the more chronic cases it is often very big, reaching as far down as the umbilicus. It was felt on clinical examination in 57 per cent. of these cases (Table VI.) and was certainly enlarged in a greater proportion. The percentage of cases in which at autopsy it was found to be 9 oz. or over in weight was 86 (normal 4–6 oz.). In 50·4 per cent. it weighed over 1 lb., in seven cases over 2 lb., and in one case 3 lb. 11 oz. The possibility of feeling it clinically depends on several things besides the degree of enlargement: (1) Careful and frequent examination; (2) the thickness of the patient's abdominal wall; (3) the condition of the

spleen itself. A hard, firm spleen is easily felt while a soft œdematous organ of much greater size cannot be defined—e.g., two spleens found to be 9 oz. on weight had been palpable during life, while in another case where the weight was 1 lb. 7½ oz. there was no indication of splenic enlargement before death.

In Prof. Turnbull's experience the spleen at necropsy is characteristically a chronically inflamed spleen. It is greatly enlarged and firm, and shows upon the cut surface trabeculæ and enlarged Malpighian bodies. Microscopically the pulp shows an infiltration of a chronic type, the majority of the infiltrating cells being plasma cells and large mononuclear cells with deeply basophil cytoplasm. Occasionally, however, in the typically chronic cases a spleen showing little or no enlargement is found at necropsy. Death is then due to heart failure and the spleen is of the "back pressure" variety. It appears, therefore, that the inflammation and consequent enlargement of the spleen may diminish in intermissions of the bacteriæmia; such intermissions can be recognised on the temperature chart during life. These variations in the bacteriæmia and consequent size of the spleen can explain failure to palpate the organ or discrepancies between clinical and post-mortem findings.

In a number of cases pain in the splenic area was followed by a rapid enlargement of the organ and infarcts were found after death. If these events are correlated the enlargement must be due to œdema or inflammation caused by the embolism and not to the infarct itself, which is not larger than the healthy tissue it replaces. Post-mortem infarcts are found more often in the spleen than in any other organ (see Table VII.).

TABLE VII.—*Embolic Lesions Found at Autopsy.*

Infarcts in Solid Organs.

	Cases and Per cent.*
Spleen	95 (72·5)
Kidneys	88 (67·2)
Myocardium	31 (23·7)
Lungs	14 (10·7)

* Percentage in 131 autopsies.

Emboli and Thrombi in Blood-vessels.

	Cases.
Cerebral arteries	14
Intestinal arteries	6
Iliac and femoral arteries	4
Brachial and radial arteries	2
Central artery of the retina	1
Internal jugular and innominate veins	1
Iliac and femoral veins	2
Right lateral sinus	1
Prostatic vein	1

Aneurysms Due to Direct Extension of the Infection.

	Cases.
Aorta and sinuses of Valsalva	6

Embolic Aneurysms.

Intestinal arteries—		
Mesenteric	10	14
Ileo-colic	4	
Cerebral arteries—		
Right middle cerebral	6	10
Left middle cerebral	2	
Left anterior cerebral	1	
Arachnoid artery in left parietal lobe	1	
Hepatic artery		1
Renal artery		1
Coronary artery		1

False Aneurysms.

Arteria profunda femoris	1
Posterior tibial artery	1

6. *Embolic phenomena* are an important part of the disease. Instances have been given of cases in which they provide the first symptom; more often they cause striking incidents in the course of the illness. Attacks of renal pain followed by hæmaturia; pain in the left hypochondrium followed by rapid enlargement of the spleen; cough with expectoration of blood-stained sputum—a definite hæmoptysis occurred in four patients—attacks of gastro-enteritis with abdominal pain, associated with embolism or thrombosis of the mesenteric or cœliac arteries. In all these instances and in the cases of hemiplegia the clinical signs and the post-mortem findings are correlated—for instance, in an unusual case of a woman aged 26 swelling of the right arm appeared six days before death, followed by great and increasing œdema, and at the autopsy thrombosis of the right internal jugular vein and innominate vein was found. In the myocardium, however, although infarction and fibrosis are fairly common at autopsy, it is rare to find any clinical record of the actual attack. Table VII. shows the localisation of the emboli in the London Hospital cases.

Embolic aneurysms are not uncommon, and one remarkable case must be recorded.

A girl of 13 was admitted to hospital on April 10th with one week's history of severe abdominal pain. A nodule was present just above and to the right of the umbilicus. This disappeared, but in May returned and increased in size. The patient's symptoms, however, subsided, and she was discharged in June. Six weeks later she was readmitted, complaining of "a lump in the stomach." The nodule was now 2 in. in diameter, was movable, hard and dull on percussion. It was not fluctuating and non-pulsatile. The provisional diagnosis lay between a retroperitoneal sarcoma and tuberculous adenitis. Signs of endocarditis were present, but the child had had two attacks of rheumatic fever and the blood culture was sterile. Laparotomy was performed under stovain. An aneurysm of the mesenteric artery burst as soon as the peritoneum was opened and the patient died an hour later. Post mortem an infective aneurysm (10 × 5 × 6 cm.) was found replacing the superior mesenteric artery 4 cm. from its origin. Infective endocarditis of mitral and aortic valves was present with the usual associated conditions of the kidneys, spleen, &c.

Post-mortem embolic aneurysms were found in the distribution shown in Table VII.

Embolic lesions of great diagnostic value are Osler nodes. These are red raised painful spots which occur on the fingers and toes and last for a few days. They were noted in only 8 per cent. of the London Hospital cases (Table VI.).

7. *Clubbing of the fingers* is an interesting phenomenon which seems in these cases to depend on the toxæmia more than on a mechanical defect in the circulation. It has been observed to diminish (Libman, 1925), but in general depends on the duration of the disease. It was noted in 35·5 per cent. of the London Hospital cases (Table VI.).

8. *Blood Conditions.*—The anæmia is a slowly progressive secondary anæmia. In one chronic case the red cells were 3,140,000 and the hæmoglobin 55 per cent. in May, while in December the red cells were 2,100,000 and the hæmoglobin 35 per cent. In another the count was 4,300,000 in April and 3,200,000 in June. The lowest count in the series was 1,200,000 with 30 per cent. hæmoglobin, while in 86·4 per cent. of those examined the red cell count was under five millions. In three cases (5 per cent. of those examined) there were over six million red cells, in one the count was made about a month before death, the other two were discharged with symptoms improved, but physical signs unchanged. The anæmia sometimes leads to the "earthy" or café au lait" complexion mentioned in the literature. Amenorrhœa unconnected with pregnancy was noted in 16 (23·9 per cent.) of the women. Leucocytosis is not characteristic; it was found in only 25·4 per cent. of the counts made and was often slight—e.g., 11,000 or 12,000 white cells with a relative polymorphonuclear increase up to about 85 per cent. In one case there were 35,999 white cells with only 35 per cent. of polymorphonuclear cells and 37 per cent. myeloblasts, an unusual complication. Leukopenia is more common than leucocytosis, and occurred in 58·7 per cent. of the cases examined, the lowest count of 1920 white cells, of which 44·5 per cent. were polymorphonuclear cells, was associated with a very low red cell count. Purpura was noted in 29·5 per cent. of these cases, and is probably a result of the bacteriæmia, though it may be due to anæmia; it usually occurs as crops of petechiæ; allied manifestations are *epistaxis*, *retinal* and *subconjunctival hæmorrhage*, *melæna*, *hæmaturia*, and *bleeding of the gums*. In one long-continued case all these were noted at different times except bleeding of the gums. A cutaneous eruption of "free hæmorrhagic bullæ over the face and arms" was described by Coombs (1921) and is probably analogous to the purpura and other hæmorrhagic occurrences. It was observed in three of the London Hospital patients and was in each case diagnosed as a halogen rash. Dermatologists recognise that patients suffering from severe cardiac and renal disease are particularly liable to this type of iodide eruption (Sequeira, 1927), and in each of the three cases the amount of iodide given was small and the patient was seriously ill.

In one case the eruption appeared after grs. 90 of potassium iodide taken in gr. 10 doses three times a day. It was symmetrical, beginning as purpuric papules, and developed into hæmorrhagic vesicles about the size of a sixpence

surrounded by purpuric patches. It began to fade on the fourth day (the iodide had been suspended) and the patient died eight days after its appearance.

For another patient, a woman, potassium iodide, grs. 5 three times a day, was ordered on May 18th for four days; the rash appeared on May 21st and was still present on May 29th; the patient died on June 11th.

The third patient, like the first, was a man. He was ordered grs. 3 of potassium iodide three times a day for three weeks as an out-patient. The iodide was then apparently suspended, and when the patient was admitted a week later the eruption was present. He died four days after admission.

Diagnosis.

Diagnosis is not usually difficult, but sometimes one aspect of the case predominates and may mislead for a time.

1. *Acute rheumatism* is a frequent early diagnosis, and those cases which first come under observation with pains in the joints, fever, and a cardiac lesion are indistinguishable from rheumatism until the therapeutic test of administering salicylates is applied, unless, of course, an enlarged spleen or other complication raises a doubt. Albuminuria and purpura may be associated with rheumatic endocarditis; clubbing of the fingers may be present if the heart was severely damaged by a first attack in childhood; embolism occasionally occurs but Osler nodes are said to be diagnostic of endocarditis lenta and to occur in no other disease.

2. Some cases resemble *typhoid fever*—e.g., that of a woman of 25 who had an illness diagnosed as influenza four months before admission to the hospital and had been "languid and out of sorts" since. She complained of headache, pains in the legs, sweating, and diarrhœa. The tongue was heavily furred and the spleen was palpable, the temperature was irregular, rising to 103° F., and leukopenia completed the picture. There was a mitral systolic murmur and clubbing of the fingers which could be accounted for by an attack of rheumatism at the age of 16. The Widal reaction was, however, negative, and the blood culture grew non-hæmolytic streptococci on two occasions. Autopsy revealed typical lesions of the aortic and mitral valves, subacute lipoid nephritis, and splenic and renal infarcts.

3. Gastro-intestinal symptoms dependent on large emboli have led to a diagnosis of *acute gastro-enteritis* and even simulated *intestinal obstruction*.

4. Cerebral embolism and hæmorrhage are puzzling if the patient is unconscious when first seen.

5. Sometimes the evidence of renal disease and uræmia lead to a diagnosis of *nephritis*, the underlying cause being overlooked.

6. An *aneurysm* may be the presenting sign, as in the case quoted of an abdominal tumour and in the case of a man of 24 who was admitted with a large swelling in the thigh which proved to be a false aneurysm connected with the arteria profunda femoris.

Prognosis and Treatment.

Prognosis is regarded in this country as practically hopeless. Only 33 (16·5 per cent.) of these patients did not die while under observation; four were definitely worse on discharge and none showed any real signs of recovery, though in eight the symptoms were alleviated. Libman (1925), however, records at least ten cases of recovery, one patient being free from all symptoms as long as 11 years after definite signs of the disease, including Osler nodes and a positive blood culture had been observed.

Treatment has so far proved futile. Vaccines, serums, intravenous medication with colloidal metals, colloidal iodine, mercurochrome, arsenic and its derivatives, especially sodium cacodylate, have all been tried. The oral administration of sodium sulphocarbolate was at one time popular. Blood transfusion may improve the general condition, but has no specific action. No treatment appears to have any permanent beneficial effect; the best result obtained was a temporary lowering of the temperature. At present our power to help is limited to general treatment, open air, and attention to the patient's comfort and happiness, and I do not think that we should be deterred by fear of embolism from allowing the patient to lead as active and normal a life as he feels inclined to do. Emboli occur even in bed and, on the other hand, a sudden death or the curtailment of a few weeks of life is in many cases to be preferred to the death from progressive heart failure, toxæmia, or uræmia, which will inevitably occur.

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SPLENIC ANÆMIA.

THE NECESSITY FOR EARLY OPERATION.

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SPLENIC anæmia, as a clinical entity, was first described by Gretzel in 1866, and later in the same year the name "splenic anæmia" was given to the disease by Griessinger. The condition is characterised by an enlarged spleen, secondary anæmia, leucopenia and, as a rule, a relative lymphocytosis.

In 1883 Banti, of Florence, first described the phase of the disease which goes by his name. Banti's disease is merely a late stage of splenic anæmia complicated by cirrhosis of the liver. Banti's hypothesis is that there is a primary splenomegaly due to an infective agent, and that the splenic enlargement itself produces another toxin which, acting on the liver and on the splenic veins, produces the changes found in Banti's disease, the anæmia being the result partly of toxæmia and partly of hæmorrhage.

Naunyn and others consider that splenic anæmia is primarily a cirrhosis of the liver, and that the enlargement of the spleen is always secondary to early changes in the liver. Osler and McCrae [1] describe splenic anæmia as "a disease of the spleen of unknown origin characterised by progressive enlargement, anæmia, a tendency to hæmorrhage, and in some cases a secondary cirrhosis of the liver with jaundice and ascites. That the spleen itself is the real seat of the disease is shown by the fact that complete recovery may follow its removal." There can be no doubt that Osler's reasoning is sound, and that the disease is primarily splenic in origin. It is probably the result of a toxin from some infective process located in the spleen. Thursfield [2] states that it is

certain there are cases of splenic anæmia where the stage of cirrhosis is never reached, and that the termination of the disease may be either fatal anæmia or an equally fatal cirrhosis.

The question of splenectomy in the treatment of splenic anæmia is thus of the greatest importance. Pearce, Krumbhaar, and Frazier[3] state that as a general fundamental principle the best results from splenectomy are obtained in those diseases in which there is evidence of increased blood destruction. Such cases would include hæmolytic jaundice and splenic anæmia, and also Gaucher's disease, von Jaksch's disease, and pernicious anæmia, in which splenectomy has been tried.

To obtain satisfactory results in splenic anæmia, early operation is absolutely essential. If there is definite impairment of hepatic efficiency, splenectomy is contra-indicated because of its dangers. Even if the spleen be successfully removed in splenic anæmia with cirrhosis of the liver (Banti's disease), the secondary changes in the liver are not influenced and the hepatic degeneration continues, although the progress of the disease is retarded and the life of the patient prolonged. This accounts for the necessity for operation as early as possible. The greatest care should be taken before operation to eliminate the atypical forms of leukæmia. Splenic anæmia was described by H. C. Wood in 1871 as the splenic form of pseudo-leukæmia. Splenectomy in leukæmia almost invariably results in the death of the patient. A. van Verts, in 1898, collected 25 cases of splenectomy in leukæmia, and C. Fevrier, in 1901, two cases. Of these only three survived, and Banti himself considered that one of the latter, Franzolini's case, was really a case of Banti's disease and not leukæmia at all.

Two Contrasting Cases.

The results of splenectomy in the two cases described below have a definite bearing upon the question of early operation in cases of Banti's disease, and as such are, I think, worth recording. They are the more interesting in that they are familial. The patients were sisters; both developed splenic anæmia followed by liver changes, and both had splenectomy performed. The one operated upon in the early stages of liver involvement recovered; the other, suffering from more advanced hepatic changes, died.

CASE 1, aged 35 years, married, was admitted under Prof. F. Langmead to the medical unit wards of St. Mary's Hospital on April 13th, 1926. She had had ulcers in the mouth and pallor since girlhood, and a lump in the abdomen since 1918. In January, 1926, she had had a labour induced owing to the impossibility of full-time delivery; the baby was dead. Afterwards "she was delirious for a week," and was told at the time that "her kidneys were bad." Her father had Bright's disease, and two brothers had died of tuberculosis.

On admission her general condition was fairly good, but her colour sallow. A blood examination gave the following result: red cells, 4,288,000 per c.mm.; white cells, 2500 per c.mm.; hæmoglobin, 58 per cent.; colour-index, 0·68; polymorphonuclear leucocytes, 78 per cent.; small lymphocytes, 12 per cent.; large lymphocytes, 9 per cent.; eosinophils, 1 per cent.; nucleated red cells and some immature leucocytes present; Wassermann reaction negative. There was no enlargement of glands, but the spleen was much enlarged, the lower pole reaching well below the umbilicus in the right iliac fossa. The liver dullness was diminished and the hepatic efficiency impaired. Banti's disease was diagnosed.

On June 3rd, 1926, splenectomy was performed by Prof. C. A. Pannett. The spleen showed peri-splenitis and was very adherent. The splenic and inferior mesenteric veins were enormously dilated, and there was considerable loss of blood during the operation. The patient afterwards was much shocked and remained semi-comatose until June 5th, when she sank into deep coma (cholæmia) and died.

The spleen was firm, dark red, and about seven times the normal size, weighing 1700 g. The liver was small, thin, dark in colour, and about two-thirds of the normal size. The surface was roughened and thickened in places, and the portal and splenic veins were thrombosed.

It should be noted that this patient was sent into hospital eight years after a "lump" had been discovered in her abdomen, and the only means of prolonging her life was successful splenectomy. Before her operation we had had in the wards a case of Banti's disease with cirrhosis of the liver and ascites, which had been operated upon with excellent results. In these advanced cases, however, the operative risk is always greatly increased, and it is a short-sighted policy to postpone the consideration of splenectomy for years, until the only alternatives are a painful lingering death on the one hand, or the risk of a fatal result to the operation on the other.

CASE 2, aged 42 years, married, had had slight anæmia for five years. In December, 1926, she began to feel ill, her menstrual periods occurred every fortnight, and lasted for five to seven days, and she became more anæmic. She was kept in bed for three months by the doctor, who told her she had an enlarged spleen. In April, 1927, she had a severe uterine hæmorrhage, and was in bed for five weeks as a result. In October, 1927, she came to London to see a specialist, who advised admission to hospital, but she refused. On April 23rd, 1928, she was sent by her doctor to consult me. She had pain and swelling on the left side of the abdomen, did not feel fit, and was unable to carry on her work. The spleen was enlarged down to the umbilicus. The liver was not palpable; on percussion the lower level of the hepatic dullness was found two fingers' breadth above the costal margin. Blood examination gave the following result: red cells, 4,608,000; white cells, 3400; hæmoglobin, 70 per cent.; colour-index, 0·76; poikilocytosis and anisocytosis present; polymorphonuclear leucocytes, 76 per cent.; large lymphocytes, 5 per cent.; small lymphocytes, 12 per cent.; neutrophil myelocytes, 3 per cent.; transitionals, 4 per cent.; coagulation time of blood, two minutes. Routine examination of the urine revealed 0·64 per cent. of sugar, but no acetone or diacetic acid. After 50 g. of glucose had been taken the blood-sugar rose from its fasting level of 0·117 per cent. to 0·246 per cent. in one hour, 0·32 per cent. in an hour and a half, and to 0·255 per cent. in two hours. The Wassermann reaction was negative. X ray showed shadows in both antra of Highmore and on washing-out flakes of mucus were found.

I recommended immediate admission to hospital and splenectomy, but, although the patient herself was prepared to undergo the operation, her relatives refused to consider it on account of the fatal result in her sister's case. From time to time during the next five months I unsuccessfully urged operation. On Oct. 3rd, 1928, she agreed to come into St. Mary's Hospital for liver efficiency tests. A definite amount of urobilin was found in all the specimens of urine, suggesting some impairment of liver function. 40 g. of pure galactose, with a rotatory power of not less than 76, were given. The amount of sugar passed in the urine during the next three hours amounted to 2·61 g. The normal amount would be 1·5 to 3 g. in the first three hours. In definitely disordered hepatic function the sugar passed in the first three hours is 3 g. or more. In advanced cirrhosis of the liver it may be as much as 30 g.

Blood-sugar.	Fasting.	One hour.	Two hours.
(*a*) Normal case	0·085	0·11	0·09
(*b*) In cirrhosis	0·08	0·19	0·37
(*c*) In patient's case ..	0·07	0·134	0·134

As the *urinary sugar* was within the normal limits I recommended an exploratory laparotomy for the purpose of examining the condition of the spleen and, more particularly, of the liver. If the latter showed any definite degree of cirrhosis, splenectomy would not be attempted. The patient was prepared to agree to this, but again her relatives and friends persuaded her to refuse operation. She left the hospital after a week, and I was forced to desist from any further attempts to get the spleen removed. Before she left, however, I again explained the situation very plainly to her. If she underwent the operation successfully there was the prospect of good health for many years. On the other hand, like her sister, she might not survive the operation for more than a few days. The third alternative was no operation, with the prospect of gradual deterioration, the possibility of a sudden fatal hæmorrhage, and at the best a lease of life of not more than four years.

The choice was one not easily made, but ten days later she appeared at the hospital prepared for immediate operation. She had overcome the opposition of her family by pointing out that if, because of them, she did not undergo the operation, she would, when she was dying in two or three years' time, ask them why they had prevented her from seizing the opportunity of recovery whilst there was still time. Under the circumstances her action was a very brave one. On Oct. 18th, 1928, she was operated upon by Prof. Pannett, under a general anæsthetic, C_2E_3 and open ether.

Deep anæsthesia had to be induced by using chloroform for a few minutes, but chloroform is absolutely contra-indicated in cases with any degree of cirrhosis of the liver on account of its degenerative effect on the liver cells.

A left paramedian incision was made, the peritoneal cavity opened, and the abdominal contents examined. There was very little evident cirrhosis of the liver, although the organ was smaller than normal, and it was decided that it would be safe to proceed with splenectomy. The spleen was bound down by adhesions on the anterior surface of the lower pole, the pedicle, and the upper pole. The vessels in the adhesion were much enlarged and were ligatured and divided in the usual way, and the hæmorrhage on the whole was not very severe. On account of the density of the adhesions the operation took nearly an hour and a half, which is another strong argument in favour of early surgical interference in these cases. There was a considerable degree of shock, but on the whole the patient stood the operation fairly well. On her return to the ward her pulse-rate was 132, and she was given three pints of saline per rectum and an injection of morphia gr. ¼. The next day, Oct. 19th, she was very drowsy and difficult to rouse. She was given 500 c.cm. of intravenous saline, with 5 per cent. glucose, followed by 10 units of insulin. She suffered from very severe dyspnœa and a pulse-rate of 136; atropin gr. 1/150 was given hypodermically, and rectal salines, with 5 per cent. glucose four-hourly during the night. There was slight improvement in the morning. On the 20th she experienced much discomfort from abdominal distension, but the flatulence was relieved by a turpentine enema. Her temperature was 101° F., and her pulse-rate 88. Next day she had severe præcordial pain, and on the 22nd was again very drowsy and of a bad colour, with a temperature of 102° and a pulse-rate of 88. Saline with glucose was given per rectum. Examination of the lungs showed only a few moist râles at the bases. On the 27th she complained of pain in the left groin and very severe headache. On the 28th she was very drowsy again during the day and fatigued at night. The stitches were removed on the 30th; the wound had healed perfectly. She still had great pain in the left groin, but no evidence of femoral thrombosis.

By Nov. 4th her general condition was slowly improving. Her temperature fell to normal for the first time, but she continued to have rises of temperature, up to 100·6° until the 24th, due, no doubt, to gradual absorption of toxic products from the thrombosed gastro-splenic vessels.

A blood count taken on Nov 29th showed red cells, 4,600,000 per c.mm.; white cells, 10,600 per c.mm.; hæmoglobin, 70 per cent.; colour index, 0·76; polymorphonuclear leucocytes, 52 per cent.; large lymphocytes, 5 per cent.; small lymphocytes, 28 per cent.; transitionals, 6 per cent.; neutrophil myelocytes, 8 per cent.; large hyalines, 1 per cent. It will be seen that the red count remains the same, but the white cells have increased from 3300 to 10,600 per c.mm. On Dec. 4th 40 g. of galactose were given, and 3·69 g. of sugar were passed in the urine during the first three hours. The blood-sugar rose from its fasting level of 0·055 per cent. to 0·08 per cent. one hour, and 0·111 per cent. two hours after galactose.

Pathological report on spleen.—"Typical spleen of venous obstruction. The veins are greatly enlarged and thick-walled. Throughout the pulp the venous spaces are dilated and surrounded by fibrous tissue. Malpighian bodies small. No sign of streptothrix seen." Immediately after ts removal an attempt was made by Dr. Leonard Colebrook to obtain a culture from the spleen of the streptothrix suggested by Alexander Gibson, of Oxford, as a possible cause of splenic anæmia, but the result was negative.

The patient was discharged on Dec. 5th and is making good progress.

Cases of complete cure of splenic anæmia after splenectomy have been recorded in the literature, but the operation must be performed in the very earliest stages, before the liver becomes involved. The prognosis becomes progressively more serious with the onset and advance of hepatic cirrhosis and, moreover, removal of the spleen in such cases does not prevent the gradual spread of the degenerative changes in the liver cells. Notwithstanding this, however, the spleen should be removed as soon as possible after the diagnosis has been made, if liver-tolerance tests show that hepatic efficiency is not much impaired, the reason for this being that the expectation of life is much greater after successful operation. In the early stages of splenic anæmia splenectomy is a relatively simple matter, for there is not much enlargement of the spleen and comparatively few adhesions; in the later stages the operation is a long and difficult one, and the operative mortality is heavy. It is essential also to remember that chloroform as an anæsthetic is contra-indicated in splenectomy if the liver function is in any way impaired.

The longer the physician hesitates before calling in a surgeon the less chance will the patient have of recovery. The diagnosis should be made as soon as possible, and no effort on the part of the practitioner should be spared to persuade the patient to undergo early operation. Having done this his responsibility ceases, but it is unfair to the surgeon and still less fair to the patient to delay consideration of splenectomy until the liver has undergone degenerative changes and the operative risk has become serious.

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COMPLICATIONS OF TONSILLECTOMY IN CHILDHOOD.

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Tonsillectomy is now firmly established as a valuable prophylactic and therapeutic measure, and is more widely advocated and performed at the present time than ever before. It has therefore seemed well to undertake a brief clinical review of such complications as occur, and to discuss their course and prognosis. The very infrequency, relatively speaking, of these illnesses gives point to such an investigation, as in ordinary practice personal experience of uncommon conditions naturally grows slowly, while few general clinical reviews of this subject have appeared in this country.

This paper is based on the in-patient records of the Hospital for Sick Children, Great Ormond-street. At that hospital over 5000 cases are operated on every year by the method of dissection introduced by Mr. G. E. Waugh. This method produces more satisfactory results than any other, as is now generally recognised. A very considerable proportion of the cases of complication included here, about half, had been operated on elsewhere by various methods. The years 1922 to 1927 inclusive were chosen as being the most useful, as it is only recently that the operation has been performed so extensively all over the country.

Nature and Incidence of the Complications.

It is first of all necessary to define the term "complication of tonsillectomy." An illness has here been accepted as a complication which quite definitely has begun within 24 hours of operation, whether its onset be insidious or abrupt; it must be severe enough to confine the child to bed for 24 hours or longer. When the operation has been undertaken for the relief of a disease already present any exacerbation of the illness occurring within 24 hours of operation is accepted as a complication. It is believed that this criterion is sufficiently accurate for the purpose.

No statistical conclusions are given as it is not claimed that every case of complication admitted to the hospital in the six years under review has been traced. In addition, very many of the cases were not operated on at the Hospital for Sick Children. The cases of complication following tonsillectomy which are seen from time to time in the wards of a children's hospital are apt to impress one unduly with their apparent frequency. A series of cases of post-tonsillectomy pneumonia seen shortly before this investigation was begun had created such an impression in my mind, but a careful search through the records revealed the real rarity of such cases together with the fact that they, like others, tend to occur in "runs."

The very fact that both physicians and surgeons can recall off-hand two or three complications of tonsillectomy, with dates, names, and details, supports this view. It is the rarity that stands out most clearly in one's memory.

The conclusion to which this investigation has led, therefore, is that tonsillectomy, performed according to Waugh's method, is a safe operation, though complications occasionally occur which may be serious, and rarely are fatal. It will be seen that the prognosis of these illnesses is usually good, recovery in the great majority of cases being rapid and complete.

It will suffice to indicate the course which complicated cases may be expected to follow, and the developments which may occur and should be watched for.

The *milder complications* are the most frequent. Surgical shock, always slight in this series, ketosis with occasional transient glycosuria, tachycardia, cervical adenitis, feverish cold, and post-tonsillectomy debility are included in this group. These cases all do well and give rise to little or no anxiety. Abscess very occasionally results from cervical adenitis (one case in this series) and a stay at a convalescent home may be necessary to cure post-operative debility; but the overwhelming majority, though ill enough to be kept in bed for a few days, make a complete recovery within 72 hours. Most of the e illnesses follow directly on the operation, but an interval of 24 hours may elapse. A word may be added with regard to tachycardia. The condition is rare, but quite definite; the children are not shocked and appear quite well; ketosis is absent or very slight; and the temperature is normal except perhaps the first day. A pulse of 150–200 may be maintained for five to seven days, falling to normal by rapid lysis. Possibly this is a sympathetic effect. It must be understood, of course, that the discovery of ketones in the urine, or the general picture of shock or debility, does not absolve the practitioner from a search for evidence of more serious mischief. This will be mentioned again later.

There are a number of complications of slightly more serious import which may be discussed together. This group includes hæmorrhage, hysterical manifestations, acute gastro-enteritis, and otitis media. Primary hæmorrhage seems to be more important than secondary hæmorrhage, which was always mild and easily checked, but the majority of all cases are readily controlled by adequate treatment and do not require to stay in hospital longer than a week. One child, a boy aged 5, after a moderately severe primary hæmorrhage, passed obvious blood in the stools for nearly three weeks afterwards, but was never seriously ill. One death occurred.

The child who died was a girl of 3½ who was believed to be a case of so-called pseudo-hæmophilia. Her sister suffered from a similar condition and also died of hæmorrhage. The case was therefore thoroughly investigated.

Willebrand [1] has described a family with 23 bleeders in 66 members in four generations. The coagulation time is normal, but the bleeding time greatly prolonged. The platelets were down to 55,000 in some cases, though normal in others, but a purpuric tendency was definite in all.

Secondary Anæmia.—Certain cases of secondary anæmia of varying degree may be mentioned here. These all followed post-operative hæmorrhage, but comprised only a small proportion of the hæmorrhage cases. It is believed that these are cases of post-operative debility, complicated at the beginning by hæmorrhage. The red blood corpuscles are only moderately reduced, 3,500,000 to 4,000,000 per c.mm. being a usual figure. The main feature is the marked reduction of the hæmoglobin, which is often below 20 per cent. The anæmia is readily cured by the administration of iron, but the debility often necessitates a month or so at a convalescent home.

Hysterical manifestations, which here include chorea, are occasional and transient, and resolve completely. Cases of persistent vomiting without ketosis or other cause, dysphagia, and anorexia occurred, and all the patients were discharged cured within a fortnight. Special mention may be made of chorea. It is a striking fact that in the six years covered by this article only one case of chorea could be attributed to tonsillectomy, and this was discharged cured in seven weeks; while of a large number of established cases of chorea operated upon only one was made worse by tonsillectomy, and that only temporarily. Most were definitely improved by the operation.

Acute gastro-enteritis is rare, and rapidly cured. The onset may be with meningismus and fever. This may, however, occur as a secondary manifestation of *otitis media*, or other infection. Otitis media itself must receive special attention. The cases here discussed were admitted six to eight days after operation, because they were "not doing well." Aural discharge occurred on the day of admission, or the day after, in cases where myringotomy was not performed on admission. The prognosis was good, the discharge ceasing completely in two or three weeks, though occasionally a mastoid abscess followed. All the cases did well, and no case of cerebral abscess or meningitis occurred. This is decidedly one of the commoner complications.

Renal Complications.—Acute hæmorrhagic nephritis is the typical lesion, and ten such cases occurred in the period under discussion. The onset is sudden, with fever and general malaise, and occurs seven to ten days after operation. The interval after operation is not one of perfect health, the clinical picture suggesting slight post-operative debility and comprising lassitude and poor appetite. Occasionally the nephritis is merely a manifestation of a general septicæmia, and the prognosis is the prognosis of the graver condition. In uncomplicated cases the prognosis is excellent, as is typical of this illness generally. The blood-urea is not high (27–35 mg. per 100 c.cm.), and recovery is complete. One case remained in hospital nine weeks before the urine was reported clear, but this was exceptional. Two to three weeks was the usual period.

Pyelitis did not occur in this series, though one case of chronic parenchymatous nephritis, in which an exacerbation was induced by tonsillectomy, had blood and pus in the urine for ten days or so. This patient made a good recovery, and was discharged free of œdema and albuminuria; such exacerbations were uncommon. Cervical adenitis preceded the onset in one case by two days.

Septicæmia (*Septico-pyæmia*) is a grave complication, of which six examples were found. The children were "unwell" following operation for two or three days, this interval being followed by a sudden rise of temperature to 103° or 104° F., and the rapid development of an urgent illness. A feature of these cases was the early development of multiple local manifestations such as hæmorrhagic nephritis, otitis media, lobar or broncho-pneumonia, and empyema. In only one case were local manifestations absent, and it is of interest that this case comprised the only death in this group, the illness lasting 48 hours only. The development of local manifestations, therefore, however alarming in themselves, may be taken as by no means so alarming a feature in considering prognosis. Recovery in the five cases mentioned was complete in four or five months, only one patient having a trace of albumin in the urine on discharge. Pneumococci were grown from the blood in three cases, and in the remaining cases streptococci were grown from the urine during life, and in the fatal case from the heart's blood also.

Pulmonary complications were various, but the commonest were lobar pneumonia and bronchitis. Twelve cases of pneumonia and 21 cases of bronchitis occurred in this series.

Cases of lobar pneumonia were admitted, or readmitted, either directly after operation or within 48 hours. The result was uniformly good, the temperature falling by crisis on the third, fourth, or fifth day. Only one case of delayed resolution was discovered. The illness generally was always shorter

[1] Willebrand, E. A. von: Finska Läkesällsk. Handl., Helsingfors, 1926, lxviii., 87 (abstract of paper: Amer. Jour. Dis. Child., 1926, xxxii., 763).

and milder than ordinary lobar pneumonia, and the question arises as to whether these cases are true pneumonia at all. It is likely that different factors operate in different cases. Some are probably cases of bronchitis or mild blood infection associated with partial collapse of one lobe due to inhaled blood-clot; others may be ether pneumonias, while others again are almost certainly true lobar pneumonia. The part played by chill is difficult to assess, but it is worthy of note that nearly as many cases occurred following operations performed in the six summer months as in the winter and early spring.

Secondary complications of pneumonia occasionally occurred. A few cases of otitis media and two of empyema were noted. Other cases with multiple complications were really septicæmias, the pneumonia being as much secondary to the blood infection as the other manifestations. Broncho-pneumonia is unusual, only two cases apart from septicæmia being observed.

One of these followed directly on operation, and this case recovered completely in three weeks. The other, which was referred from outside, had evidently been operated on in the prodromal stage of measles. The child, a girl of 3½, was admitted three days after operation, exceedingly ill, with extensive broncho-pneumonia and an early measles rash. This child died after an illness of eight days. The part played by operation is difficult to state fairly, but one may say that the operation was prejudicial to the health of the child under the circumstances.

This case is a useful reminder of the necessity of reconsidering every case immediately before operation. A slight rise of temperature, with mild symptoms of disturbed health, ought to cause either the postponement of the operation or careful reconsideration of the case.

Bronchitis was frequent, uniformly mild, and nearly always rapidly and completely recovered from. It usually followed directly on the operation, and a week at most sufficed for cure. The most important point in this connexion is the occurrence of bronchiectasis. Contrary to what was expected, only one case of bronchiectasis could be attributed to tonsillectomy in six years.

This child had a history of bronchitis following operation which was slow in clearing, and which was followed by further attacks at intervals of several weeks, until admission three months after operation. There was then an established bronchiectasis and the child, a boy aged 2½, died of a terminal septic broncho-pneumonia two months after admission. Both lungs were extensively involved. Bronchitis following tonsillectomy should clear rapidly, and any case which is slow in recovering may be suspected.

No case of pulmonary abscess was found. This complication is common in America though rare in this country. The use of local anæsthesia for tonsillectomy, which is popular in the United States, has been blamed for this, and with some reason.[2] There were six cases of empyema. In two of these no history of pneumonia was obtained, the only symptoms being those of "debility," with right shoulder pain in one case. One of these was a mixed pneumococcal and *Bacillus proteus* infection, and the other was streptococcal. Two cases were secondary to septicæmia, while two followed pneumonia. These were all pneumococcal. The prognosis may be regarded as good, more especially when one considers the uncertain outlook in cases of empyema in childhood generally. All these cases were treated by rib resection and drainage, and all were dry and healed inside four weeks with full expansion of the lung.

Acute Specific Fevers.—Two possible cases occurred, one of diphtheria and one of scarlet fever. The case of diphtheria followed directly on tonsillectomy, while the other began two days after operation, being diagnosed two days later. The relation of these cases to the operation may be denied, as both might be due to coincidence, but they are mentioned to illustrate the rarity of these illnesses after tonsillectomy, these being the only two in six years. It is, of course, possible that cases might be referred direct to a fever hospital, but it is unlikely that this would apply to more than half of them. It is worthy of special note that no case of post-diphtheritic palsy following tonsillectomy was reported at the Hospital for Sick Children in the six years under discussion.

Commentary.

If the condition of a child within 24 hours of operation is not satisfactory we know first of all that this may be due to hæmorrhage, surgical shock, or ketosis. Any one or more of these may be present, but even so, search should be made for evidence of other more important complications which may coexist at this stage. The temperature, pulse, and respiration may suggest pneumonia, and lead to an examination of the chest for evidence of this or of bronchitis, although a negative result cannot exclude either.

Pyrexia, without evidence of any of the above, suggests a close watch for evidence of scarlet fever or diphtheria, and an examination of the mouth for Koplik's spots, this last more especially in the presence of acute coryza. Even if these illnesses are incidental only, they are nevertheless important to detect. As a last resort, post-tonsillectomy intoxication may explain the symptoms, and is a relatively common condition. Such conditions as shock, ketosis, and post-tonsillectomy intoxication improve rapidly under treatment, as we have seen, and should such improvement not occur, it is an indication for a re-examination of the chest for signs of pulmonary involvement. We know that otitis media, nephritis, and septicæmia are unlikely to provide evidence of their presence so early, but an examination of the ears and the urine is wise; while a high temperature with a decided change for the worse suggests septicæmia, and it is useful to remember in such a case that nephritis, pneumonia, and otitis media may all be secondary manifestations of this condition. The significance of cervical adenitis as a possible forerunner of acute nephritis may be helpful.

The next case for consideration is that of a child who has perhaps apparently recovered fairly well from the operation, but who is brought by his parents two to ten days after because he has been listless, irritable, and has refused his food, and has generally "not been doing well." The temperature will almost certainly be raised, perhaps to 99° or 100° F., perhaps higher. The operation wound may be dirty, probably with enlargement of the cervical glands, and this may be the explanation of the symptoms. Other complications, however, may occur at this stage, and these have to be excluded. Three investigations are here of first-rate importance—examination of the ears for acute otitis media; of the urine for blood, albumin, and casts; and of the chest for established pneumonia or early empyema. The possibility of septicæmia is again to be considered, with aural, renal, and pulmonary complications as local manifestations, though usually the high swinging fever with the rapid development of an urgent illness suggests the diagnosis. A blood culture may settle the question. In otitis media watch should be kept, as always in this condition, for the development of a mastoid abscess.

Considering the evidence of the cases previously quoted, a prognosis given at any time during the period just considered may justifiably be favourable, except in septicæmia where it must be guarded. This is assuming that no grave unforeseen development has occurred, when the prognosis must of necessity be modified.

Lastly, a child may be brought up for advice several weeks or even months after tonsillectomy with a history of ill-health dating from the operation. The most likely causes of such a history, assuming that we are satisfied of its connexion with the operation, are a developing bronchiectasis, perhaps with septic broncho-pneumonia, an overlooked empyema, chronic aural infection with possible mastoid involvement, or post-tonsillectomy debility with or without some degree of secondary anæmia. Subacute nephritis is rare, no case occurring in the present series, but can be excluded by a routine examination of the urine.

A definite history of bronchitis following an operation with frequent recurrent attacks since suggests developing bronchiectasis, or at least an examination

Ochsner, A., and Nesbitt, W.: Arch. Otolaryng., 1927, vi., 330.

of the chest. Empyema, however, may give rise to no symptoms beyond debility and some shortness of breath on exertion, and therefore examination of the lungs must be routine in these cases in any event. The ears will yield definite positive or negative information, and the slightest mastoid tenderness is significant. These cases, however, are uncommon. The prognosis of empyema appears to be favourable, as previously stated, but bronchiectasis as always is of grave significance. The only case in this series died five months after operation. No case of chronic aural infection was noted, but cases do occur, and their course is apparently much the same as is usual in this condition—namely, tedious and uncertain. As has previously been mentioned, the series contains no case of post-diphtheritic paralysis. This is of interest, as it is still widely held that this is one of the risks of the operation. That these cases occur is not here questioned. It is, however, contended that the danger has been very greatly exaggerated.

It is hoped that this account of certain of the complications which may follow tonsillectomy will be helpful. The conclusion to which one must come on the evidence they supply is that not more than 1 in 200 cases of tonsillectomy suffers any ill-effects serious enough to confine the patient to bed as a result of the operation. Of these the majority are mild and readily overcome. The more serious complications are septicæmia, nephritis, and pneumonia, and may be expected within a week or ten days of operation, exceptions to this rule being bronchiectasis and empyema.

I wish to thank the honorary medical and surgical staff of the Hospital for Sick Children, Great Ormond-street, for kindly allowing me to make use of the records of the hospital.

NEW VIEWS ON THE TREATMENT OF HYPERTHYROIDISM WITH IODINE.

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Few methods of treatment have, at varying times, met with more changes of fortune than that of treating hyperthyroidism with iodine. Even though Coindet, as early as 1820, announced that he had discovered a new remedy for goitre in the iodine of certain kinds of seaweed, the treatment was practically abandoned until Trousseau, by chance, obtained proof of its favourable effects. He was called upon to treat a patient suffering from typical exophthalmic goitre whose pulse was particularly unsteady and rapid. Remembering that, while he might prescribe tincture of digitalis he must beware of iodine, by mistake he actually ordered several drops of iodine daily. Great was his astonishment when, a fortnight later, the patient returned to report that he had put on weight, was less nervous, had a much slower pulse, and was lauding the merits of tincture of iodine.

Up till about 1900 iodine was prescribed more and more for all forms of goitre, but from 1900 to 1912 the popularity of its use was greatly lessened by Kocher, who showed that colloid goitre with indurated nodules, or true adenomatous goitre, might present the symptoms of hyperthyroidism after the administration of iodine, although the patients had shown no trace of them beforehand. This syndrome was named "Iod-Basedow" by Kocher, and its demonstration was in great part responsible for the disfavour into which iodine fell in 1910. From 1910 to 1920 various workers (Marine and Lenhart, Chvostek, Marcel Labbé, Neisser, Neisser and Loewy, Zondek) reinvestigated the question, and showed by the records of some of their clinical observations that great benefit could be derived from the use of iodine in true exophthalmic goitre. Plummer, in 1923, published statistics of 400 cases, definitely establishing the value of iodine in the acute crises of exophthalmic goitre, and its value in the prevention of post-operative accidents. These facts were confirmed by numerous authors (Biedl and Redisch, Boothby, Fraser, Jackson, Mason, Mayo and Boothby, Means and his co-workers, Merke, Read, J. Slosse, Sturgie, &c.) The American workers, however, made two reservations; while all of them agreed in extolling the use of iodine in true exophthalmic goitre, they admitted its bad influence in patients with thyreotoxic adenoma, which the work of Plummer, as is known, had identified with the condition described by Kocher as Iod-Basedow.[1] If, according to the general opinion, iodine had an unusually rapid and efficacious action in exophthalmic goitre, the action was described as being essentially transient. It ceased, according to the majority of workers, immediately upon the stoppage of the drug. A second course of iodine could not have the same effect as the first, and certainly a third was, for the greater part, ineffective. In short, the action of iodine would stop if it were given continuously in the same dose as the initial one.

Favourable Results of Iodine Therapy in Thyreotoxic Adenoma.

Recent research by Dautrebande and Lemort [2] calls in question the two conclusions propounded by most of the writers previously quoted, concerning the nefarious influence of iodine in toxic adenoma and the shortness of duration of the therapeutic action of this drug. Dautrebande and Lemort have endeavoured to prove, by means of repeated examination of metabolism, whether iodine acts specifically on Basedow's syndrome only, or if favourable results can also be obtained in simple thyreotoxic adenoma. Their examinations were very numerous—ranging between 18 and 60 determinations of metabolism on each patient with toxic adenoma, and their conclusions are definite. They find that (in doses which will presently be stated) the administration of iodine has never produced an increase of the basal metabolism or of the symptoms as compared with their initial state, but has, on the contrary, the same beneficial action as in cases exhibiting Basedow's syndrome. This opinion was contrary to the conclusions of the Americans. Although we were alone in enunciating it at the time (Marcel Labbé has since supported our view [3]) in the face of the clearness of our results we could not but take our stand.

Boothby, the principal supporter of the opposite theory, writes: "Iodine administered to a case of toxic adenoma is fatal after ten days." The first thought of the reader confronted with the two theories is to ascribe to geographical differences the varying manner in which toxic adenomata react to iodine. Moreover, the condition known as Iod-Basedow still exists in Switzerland, and de Quervain avers that one daily comes in contact there with cases of goitre manifesting an individual intolerance to the drug however administered and in whatever dose above ½ mg. per diem—an intolerance which may induce the most advanced degree of cachexia if one fails to recognise its cause.[4] In the face of these contradictory conclusions, and before expressing a definite opinion, it will obviously be necessary to compare results obtained in countries where endemic goitre exists with the facts observed in flat countries. Be that as it may, the mere fact that iodine has a favourable action in Belgium in cases of thyreotoxic adenoma which are clinically identical with the toxic adenomata described by Plummer calls for reconsideration of one of the principal conclusions drawn from

[1] For the classification of goitres see Lucien Dautrebande, La Presse Médicale, Jan. 22nd, 1927.

[2] Bull. de l'Acad. de Méd. de Belgique, meeting Dec. 17th, 1927, p. 887–922. (A complete bibliography on the question will there be found.)

[3] Bull. de la Soc. des Hôp. de Paris, July, 1928.

[4] In the Schweiz. Med. Woch., 1928, No. 1, will be found the most recent statistics on Iod-Basedow in Switzerland, reported by W. Fluck, and based on the most extended findings published to date.

the American findings. The demonstration of the activity of iodine in the hyperthyroidism of toxic adenoma in which the thyroxin is, according to Plummer, normal, certainly weakens the most widely accepted explanation of the action of iodine in cases of Graves's disease—viz., that iodine re-establishes the normal iodine-saturation of the thyroxin, supposed to be desaturated in this affection.

The Duration of Action of Iodine.

The second general conclusion which seems to us to require amendment is that of the shortness of duration of the action of iodine. Up to the present iodine has been considered as a medicament with a momentary potent action which, employed up to the time of surgical interference, reduces considerably the operative mortality-rate in cases of Graves's disease to the very lowest figure (Mayo and Boothby: 0·96 per cent.), but is of no use as a fundamental treatment. Lemort and I have found that, by modifying the mode of administration of the drug, it is possible to get prolonged effects from the use of Lugol's solution.[5] The outstanding point in our technique is that we give iodine in continuous progressive doses. For a few days the patient is given 10 to 20 drops of Lugol's iodine daily, and as soon as the general condition has improved and the basal metabolism has fallen, we keep the patient under the initial dose of iodine, avoiding interruption in treatment (no matter of how short duration) as far as possible. The continued use of iodine, on the whole, has only a transitory result if one continues with the initial dose; in order, therefore, to keep the body exchanges and the clinical signs of hyperthyroidism at their minimum, we augment the dose of iodine each time the basal metabolism rises. By means of this technique we obtain a fall in the basal metabolism at each augmentation of the dose in 76 per cent. of cases of true exophthalmic goitre, and in 79 per cent. of cases of thyreotoxic adenoma. It therefore seems difficult to admit that iodine administered over a prolonged period encourages hyperthyroidism. We take the basal metabolism as an index of the amelioration of the disease, because of the objectivity of this biological method. All the clinical signs improved concurrently with the metabolism in cases of Graves's disease, and with a delay of some weeks in thyreotoxic adenoma.

Our method has this considerable advantage over the American method of a single dose administered during the few days before operation: by maintaining the metabolism at a minimum for a long time the patient is able to put on weight, and the operation can be carried out under the best possible physical conditions. All our patients have submitted to long preparation for operation (in some cases three to four months) and some were not operated on until they had put on 6, 7, 8, or 10 kg., and until the cardiac rhythm had become stabilised over a long period. Further, some of our patients maintained a minimum metabolism over a very long period with very small doses which is a great advantage for cases of hyperthyroidism who fear operation or who wish to put it off. (We have under observation patients who will presently have been treated by iodine for as long as three years, in the hope that it will not be necessary to operate.) On the other hand, this progressive method of dosage has enabled us, up to the present, to check the effects of prolonged hyperthyroid crises, some of which appeared alarming. Perhaps this treatment will go towards furthering the results obtainable from radiotherapy.

New Method of Administration of Iodine.

The method of administration of iodine seems to be important. As soon as the dose exceeds 20 drops a day, it is well to divide it into two, three, or four doses daily. As a matter of fact, iodine is eliminated with great rapidity (50 per cent. being found in the urine 12 hours after ingestion (Potel)). At present I am more and more inclined towards splitting the doses into fractions, and the two cases reported below show that that technique gives interesting results, and allows of a fall in metabolism in cases where simply increasing the dose has not been efficacious. The first case was a patient with true exophthalmic goitre, and the second a typical case of toxic adenoma.

CASE 1.—A single woman of 24 showed no hereditary tendency. In her previous history the only thing of note was frequent sore-throat. Her present illness had started without known cause two years previously. At the onset she noticed constant general lassitude, tremulousness, palpitation, headaches, and loss of weight. At the beginning of 1928 she was for a short time in hospital where a diagnosis of exophthalmic goitre was made and she was subjected to ten treatments by radiotherapy. For four months she had not menstruated. When admitted, on July 12th, 1928, to the care of Prof. Nolf, the classic signs of exophthalmic goitre were striking: marked exophthalmos with glittering eyes and fixed stare; extremely marked tremor of the hands, forearms, and eyelids; profuse sweating, and constant tachycardia with reduplication of the second heart sound. The arterial tension was 10/7 with an oscillometric index of 1½; œdema of the ankles was present, and there was persistent diarrhœa (four to five stools daily for several weeks). Attention has previously been drawn to the frequency of pharyngitis (in my first paper, loc. cit.) which is seldom absent in our country, whereas in America it is scarcely ever found. It was present in this patient with extreme and diffuse redness of the soft palate and the back of the throat. The thyroid was markedly enlarged on both sides, being of a hard elastic consistency. Its surface, though not completely uniform, did not present any clearly defined nodules, and over the entire extent of the thyroid a blowing murmur and a thrill were present. The most outstanding feature was extreme nervousness, which indeed was so uncontrollable that it was impossible to do a determination of the basal metabolic rate.

On July 15th, 1928, three 10-drop doses of Lugol's iodine were commenced daily, and on the 18th three 15-drop doses. On the 24th she was given three 25-drop doses, but the hoped-for improvement did not take place. On the 30th, after a day or two of relative quiet, we succeeded in doing two determinations of the basal metabolism at an hour's interval, the results being +76 per cent. and +84 per cent. From August 1st three 30-drop doses per day were administered, and from the 3rd three 35-drop doses. The nervousness was still as great, and the diarrhœa had not diminished. Nevertheless, the blood pressure improved, being 14·9 and the oscillometric index 2½. The metabolism was hardly altered; it was +68 per cent. on August 8th and +78 per cent. on the 11th after three 45-drop doses per day since the 9th. On the 21st it was still +75 per cent. On the 21st and 22nd ten 10-drop doses were administered throughout the day. On the 23rd the basal metabolism was +40 per cent. The nervousness was unquestionably diminished, although the pulse remained at 123. After determining the metabolism, 20 5-drop doses of Lugol's solution per day were ordered but, as the result of an error in nursing, the patient was only given two 10-drop doses on the 23rd, and four 10-drop doses and one 30-drop dose on the 24th. The metabolism on the 25th was +65 per cent. From that day the patient, who was becoming less and less nervous and in whom there was a distinct subjective improvement (she was having at the most two stools per day), apportioned out her own doses of iodine, taking 5 drops 20 times a day at half-hourly intervals. From that time onward improvement was established. Examination on the 27th showed that the exophthalmos had practically disappeared; the tremor was almost imperceptible, the patient was very much calmer, and she had put on 7 kg. in weight since admission. The metabolism on August 28th was +35 per cent., and on Sept. 3rd it was +37 per cent. in spite of a temperature of 99·3° F. This patient was operated on on the 6th (thyroidectomy as complete as possible being performed; 50 g. of thyroid being removed from the right side, and 30 g. from the left side). On the day of operation 3 ampoules of a special preparation of iodine were injected [6]; then from Sept. 7th ten 6-drop doses were given. After operation she ran a normal course. On the 10th she had menstruated. From the 14th she was given five 6-drop doses. The basal metabolism was again +32 per cent. on the 20th, and from that day iodine administration was stopped. On Oct. 10th

[5] We used a solution containing iodine 10 and potassium iodide 20, to 100 of water.

[6] In the first days following operation it is preferable to give iodine in the form of intramuscular injection. Most patients operated on for goitre, as a matter of fact, tolerate iodine by the mouth poorly. Sometimes iodine administered in milk is tolerated better.

the metabolism was +60 per cent., and on the 30th it was +62 per cent.

CASE 2.—A married woman, aged 49, was seen for the first time on March 20th, 1928. She had no hereditary tendency, and childhood and puberty had been normal. She had married when aged 22, and had her first child when 24. She noticed that after this confinement she suffered from general weakness for two or three years. Three years before coming under our observation she had rapidly lost weight to the extent of 10 kg. in a few months without apparent reason. The menopause came on a year before the time of observation, the patient at that time having twice had a complete month of meteorrhagia within four months. Gynæcological examination at that time revealed only a few small fibroids, which rapidly disappeared. About three months before observation the patient had suddenly felt considerably more nervous; in a few days sleep disappeared, and on Jan. 30th diarrhœa started and was still present (nine or ten stools daily). At the same time she noticed that her skin was becoming livid. She had lost 3 kg. in weight in the last three months.

On examination she presented a striking example of characteristic thyreotoxic adenoma. Her colour was pale and dull, the thyroid was small and uniformly studded over with little hard nodules; no blowing murmur or thrill and no carotid pulsation were present. The pulse-rate was 128, and the pulse was regular in rhythm but not in force. The arterial pressure was 14/6·5, and the oscillometric index 3. The hæmoglobin was only 70 per cent., but no abnormal blood-cells were present. In the upright position trembling was barely perceptible. The patient was, nevertheless, highly nervous, a nervousness peculiar to cases of toxic adenoma, which has been called by me *agitation inquiète*. The metabolism was +44 per cent.

From March 21st she took two 10-drop doses of Lugol's solution. Subjective improvement took place immediately, the patient sleeping better, and feeling less nervous. The metabolism on April 21st was +24 per cent. Iodine was now augmented to two 25-drop doses per day. The metabolism on May 4th was +20 per cent., even though the patient was more nervous and though the pulse-rate, which had been 102, had now risen to 119. Nervousness increased during the following days, in spite of the administration of three 15-drop doses per day, and on the 21st the patient's metabolism was +67 per cent. From that date the dose was split up into 13 3-drop doses per day. Improvement was rapid, all the subjective symptoms diminishing; diarrhœa disappeared; the skin regained its usual appearance, and there was no longer *agitation inquiète*. The thyroid diminished to the extent of becoming impalpable. On June 2nd the basal metabolism was −39 per cent., and on the 5th +10 per cent. She had put on 3 kg. in weight from the beginning of observation, even though all the treatment had been ambulatory.

Operation was performed on June 7th (subtotal thyroidectomy). The patient continued to take thyroid up to the 23rd and then stopped all medication. On the 26th all symptoms had disappeared and the basal metabolism was −42 per cent.; on the 28th it was −23 per cent. In November she had put on 10 kg. in weight and her basal metabolism was −34 per cent.

This method of small doses of iodine, frequently repeated, is obviously difficult to apply in hospital. It is not wise save in exceptional cases to entrust its application to a nurse; it is always preferable, if one is dealing with careful patients, to leave to them the work of fractioning-out the doses. Applied with scrupulous exactitude, this method renders a real service to the surgeon who wishes to operate with the minimum of danger, and to the physician who has to combat an acute hyperthyroid crisis. Even though certain goitres are obstinate to all treatment, it will be advisable to try this technique in cases of exophthalmic goitre or thyreotoxic adenoma which have not reacted, or have ceased to react to the single continued progressive dose.

Conclusions.

1. In Belgium cases of thyreotoxic adenoma react to iodine in the same manner as cases of true exophthalmic goitre.

2. The administration of continued progressive doses of iodine, in a certain number of cases, allows the basal metabolism to be maintained at a minimum over a prolonged period.

3. Fractioning of the doses of iodine has been found to be efficacious in cases obstinate to treatment by progressive doses.

Clinical and Laboratory Notes.

A NOTE ON THE PREOPERATIVE DIAGNOSIS OF DERMOID CYST OF THE OVARY.

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ONLY very rarely is a dermoid cyst of the ovary definitely diagnosed before operation. Sometimes it is considered in the differential diagnosis of a swelling in the pelvis, but in the great majority of cases where a dermoid cyst has been revealed at operation the preoperative diagnosis has been uterine fibroid, simple ovarian cyst, or simply pelvic tumour. Marshall,[1] of the Mayo Foundation, reporting on a series of 415 cases of dermoid cyst of the ovary operated on at the Mayo Clinic up to the end of 1927, states that in no single case was the diagnosis made before operation, though since that time one or two cases have been recognised. In view of these facts the following case may be of interest.

The patient was a young unmarried woman of 26 under the care of Mr. R. B. Carslaw. She had complained of intermittent pain in the left lumbar region and in the left

Radiogram showing the shadows above the brim of the pelvis.

iliac fossa for ten years. Three years earlier she had had an attack of more severe left-sided pain resembling renal colic, and since that time she had suffered from menstrual irregularity and considerable premenstrual pain. Physical examination showed some tenderness in both iliac fossæ. Rectal examination was negative. An X ray photograph, taken to exclude calculus in the genito-urinary tract, revealed three small shadows on the left side of the pelvis apparently outside the bladder area. Their radial grouping, size, and shape did not suggest any relationship to the left ureter, and they bore a fair resemblance to the shadows of teeth. As the shadows overlay gas-filled bowel, a second photograph was taken after further bowel preparation, but the shadows remained constant. An unequivocal diagnosis was made of dermoid cyst of the left ovary containing three teeth. At operation (Mr. Carslaw) the diagnosis was confirmed, and a dermoid cyst the size of a tangerine orange, containing hair, sebaceous material, and three teeth was removed.

[1] Marshall, J. M.: Proc. Staff Meetings, Mayo Clinic, 1928, iii., 4.

From the radiological standpoint, if phleboliths are excepted, shadows in the female pelvis outside the urinary tract are very rare. The conditions which may produce them are calcified areas in a pelvic tumour, lithopædion, and dermoid cyst. It might be supposed that the recognition of these shadows in a dermoid cyst would be relatively easy, and that therefore the diagnosis ought to be made more frequently. The shadows, however, are not always characteristic of teeth, and, furthermore, only about 25 per cent. of dermoid cysts contain radio-opaque material in the form of teeth or bone. Nevertheless the occasional help which radiology may give in the diagnosis of pelvic tumours should be kept in mind, especially in cases such as that reported, where no tumour was palpable and the diagnosis could not otherwise have been made.

A NOTE ON THE NON-OPERATIVE TREATMENT OF TONSILS.

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In the experience of every laryngologist there must be cases in which operation—though indicated on surgical principles—for some reason cannot be proceeded with. For such cases anything like the ordinary paints and disinfectants are practically useless, but in " London paste " we have an excellent alternative.

Introduced by the late Sir Morell Mackenzie, it consists of equal parts of caustic soda and hydrated lime mixed with a little alcohol. This preparation largely dropped into desuetude, but has been reintroduced by the work of Dr. Irwin Moore, to whom great praise is due for having brought to the notice of his colleagues a preparation capable of giving such excellent results. He has also eased the way of those who wish to use it by his applicators which are most admirably formed for the purpose they serve.

The type of tonsil to be treated by this means is not limited, but on the whole I personally prefer that the tonsil should be of the smaller buried, or semi-buried, type rather than of the large soft type containing much pus. It is very interesting to observe the way in which this preparation acts. After the first application there is a distinct eating away of a considerable part of the tonsil—sometimes of the entire tonsil—the effect evidently spreading from portion to portion, or as if a slice had been removed. It is well to have a pathological examination of the tonsil exudate before and after treatment. In my cases the streptococcus has been present before, and absent after, treatment, which is in itself confirmatory evidence of its value.

The feeling of well-being which comes to the patient is marked, and in certain cases after even one application I have known certain rheumatic conditions to clear up in a rather remarkable manner.

Method of Application.

In applying the paste a great deal of care has to be taken in its preparation. The powder, which is prepared by Savory and Moore, is shaken on to a small opal plaque, absolute alcohol is added drop by drop, and mixed by means of a special spatula. The consistency should be that of somewhat thin putty, and it requires a considerable amount of working up with the spatula to get the right consistence. No hurry should be shown in preparing the paste, as if it is not of the proper consistence not only will the action be less, but there is grave risk that the preparation will not adhere to the surface of the diseased tonsil.

Having reached the proper consistence, the paste is now taken up from the plaque by means of an Irwin Moore applicator, which is made in various sizes, though the most useful one will be found to be the one of middle size. The cavity of this applicator is entirely filled with the paste, and is smoothed just beneath the edge of the hollow space. Any particles of the preparation should be wiped off the back of the applicator, and the paste is then ready for application. Before doing so, a 20 per cent. solution of cocaine should be applied by a small swab to each tonsil and held in position for one minute. The tongue should now be depressed with a fairly heavy depressor, and kept well out of the way. The anterior pillar of fauces may be drawn to one side by a suitable instrument, such as a long pair of forceps or heavy probe; but this is usually unnecessary as, the tongue being in position, the pillars of fauces are somewhat forced asunder and gape, and into the gap so formed the applicator is gently inserted and the handle carried towards the opposite side.

It only requires a few seconds for the paste to adhere, and the applicator should be then withdrawn. Free salivation takes place, and the patient should be supplied with a small vessel for the saliva to drain into, but should be advised to avoid coughing if possible or clearing the throat. The other tonsil is now treated in a similar manner, and any particles that may have got on to the pillar—though this is rare if the application is properly made—should be wiped away with a swab.

The site of the application is now inspected and it will be found that a considerable area has become dark red, and there may be a drop of blood, but this is immaterial. After 24 hours a slough will appear, and then will gradually clear off till at the end of five or six days a considerable amount of the tonsil is found to have been destroyed. The patient has a burning sensation for a minute or so after the application, and usually for 24 hours there is discomfort on swallowing and a certain amount of pain. This chiefly applies to the first application. Occasionally there is distinct constitutional reaction, and pain reaches to the ears and up and down the throat, and in one instance there was enlargement of the cervical glands. All this, however, clears up in a day or so.

The application may be given once a week, and usually it takes about eight applications for an average tonsil; if the tonsil is very large and fleshy, more than these will be required. Care should be taken before completing the course to make sure that the lacuna magna and other follicles with their contents have been destroyed, and it is sometimes necessary to ensure this to nibble away some obstructing bridge of tissue with small cutting forceps.

The objective is not necessarily to destroy the entire tonsil, but rather its septic parts, and leave a small healthy tonsil lying in its bed.

THE RELATIONSHIP BETWEEN FEEDING AND THE DEVELOPMENT OF RICKETS.

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An attempt has been made in this study to draw statistical conclusions between the type and method of feeding during the first year of life and the subsequent development of rickets. Six hundred and fifty cases are considered, and these represent the number of patients who have attended with a fair degree of regularity at the Infant Welfare Department of St. Thomas's Hospital during the last four years. A certain number have been excluded owing to infrequent attendance during either the first or second years, or because they had left the district; Mongolian idiots and cases showing any other gross deformity are not included.

Method of Feeding.—As far as possible each baby has been completely breast-fed for eight or nine months and then gradually weaned on to cow's milk and solid food; this has been achieved in 368, or 56 per cent. of the cases. Where complete breast-feeding was not feasible, complementary feeds of cow's milk modified with water, sugar, and a 50 per cent. cod-liver oil emulsion have been given, in

approximately breast milk proportions. In certain cases, particularly where the home conditions were unsatisfactory, a dried or condensed milk has been used instead of fresh cow's milk, and in all cases the mother's health has received any necessary investigation and treatment.

Diagnosis of Rickets.—It is generally recognised that no reliance can be placed upon any one individual symptom or sign, such as pallor, sweating, flabbiness of muscle, or enlargement of the abdomen; all these may appear in many different conditions of ill-health. In the consideration of these cases emphasis has been laid particularly on enlarged epiphyses and the presence of a rickety "rosary," although the presence or absence of the other well-recognised signs has been considered before a definite diagnosis has been made. In a number of cases X ray photographs of the radial epiphyses have been taken to confirm the diagnosis, but this has not been feasible in all instances. It is admittedly impossible to diagnose the activity of the disease without radiological help, but the presence of rickets, either active or healed, can almost always be detected on clinical grounds alone. Great emphasis was laid in the Medical Research Council Report (1919–1922) on the frequency of craniotabes and its value in early diagnosis, but these cases were all studied in Vienna, and we have been struck by its comparative rarity in London; Parsons [1] is of the same opinion as regards Birmingham.

Incidence of Rickets.—Figures naturally vary very much according to locality, social conditions, and the season of the year. A few years ago John Thompson [2] stated that more than 50 per cent. of the children in London showed unmistakable signs of rickets, while Hess [3] gives approximately similar figures for the poorer districts of New York. Paterson and Darby,[4] working in the spring of 1926, found that 32 per cent. of their cases showed gross or slight signs of the disease clinically. The cases considered here were seen over a period of four years, so that the seasonal factor has been eliminated, and 21 per cent. showed clinical signs of the disease to a varying degree.

Rickets in Breast-fed Babies.—Three hundred and sixty-eight, or 56 per cent., were completely breast-fed for nine months, and of these 57, or 15 per cent., developed clinical signs of rickets. At first sight this figure may seem unduly high, but appears to be due chiefly to prolonged breast-feeding. These cases attended regularly during the earlier months, particularly if there were any feeding difficulties, but subsequently their attendance lapsed, and breast-feeding was prolonged to 11 months or even longer in 42 per cent. of the cases that developed rickets. Apart from those that had left the district, every case was seen regularly, if possible, during the second year of life, and it was found that in 36 cases breast-feeding had been prolonged unduly, of whom 24, definitely more than half, developed unmistakable signs of the disease. As would be expected, it was found that rickets had been avoided in those cases where mixed feeding had been given as well as breast milk, but the high incidence of disease among those children who were completely breast-fed for this long period is in support of the general clinical impression noted by other writers. This is admittedly an unsatisfactory state of affairs, but very difficult to eradicate among hospital patients who do not appreciate the value of regular supervision during the first two years of life. Deducting these cases of prolonged breast-feeding from the total number of rickets, it appears that only 5 per cent. of the breast-fed babies developed clinical signs of disease, while the social conditions of the cases did not appear to be noticeably worse than the average for the whole group. Although it cannot be claimed that breast-feeding completely precludes the subsequent development of rickets in an urban population, the incidence is very much lower than for the whole group.

Incidence of Rickets among Artificially Fed Babies.—In cases where breast-feeding was not possible or the quantity of breast milk inadequate, cow's milk mixtures were given unless the home conditions were unsatisfactory, in which case a modified dried milk was advised, in both instances appropriate quantities of a 50 per cent. cod-liver oil emulsion being added. It was only necessary to feed 44 cases artificially from birth, and of these 16 per cent. developed clinical signs of rickets, a marked contrast to the 5 per cent. incidence among the breast-fed group. It appeared immaterial whether fresh cow's milk or a dried milk was used with regard to the development of subsequent rickets.

Rickets in Premature Babies and Twins.—It has been recognised for a long time that premature babies and twins were particularly liable to the development of rickets, the former owing possibly to a primary deficiency of iron in the liver, and the latter to maternal exhaustion and the subsequent impoverishment of the breast milk.

Forty-three premature babies were seen, and 14, or 32 per cent., showed clinical signs of rickets, despite the fact that they had all been breast-fed for at least four months and had subsequently received adequate quantities of cod-liver oil emulsion. Sixteen twins occurred in the group, of whom six showed signs of disease. It is admittedly impossible to generalise from such small numbers, but the incidence of rickets is certainly higher than for the whole group, and suggests the advisability of supplementing the nursing mother's diet with the fat-soluble vitamins in such cases.

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RUPTURE OF LEFT AURICLE.

By Frederic W. Longhurst, M.R.C.S. Eng.

Rupture of the auricle is so rare that a case which recently came under my care seems worthy of record.

The patient, a cook, aged 73, led an exceptionally inactive life, and gave no history of previous illness bearing on the present fatal attack. She had certainly had no serious illness for the last six years, but suddenly felt ill while washing her hair at 10 P.M. She was not intelligent in explaining her symptoms, but complained of a sudden pain down the centre of the chest and into the upper abdomen. She was not unduly distressed or breathless. Her pulse was of good volume and quite regular, with a rate of 80. The heart did not appear to be enlarged; there was a mitral systolic murmur, the other heart sounds being normal. The systolic blood pressure was 175. A mild aperient only was prescribed.

She had a fairly comfortable night, and the next morning appeared normal, with the exception of some pain, the site of which was now more in the abdomen. The bowels had acted, and she had walked, one flight of stairs, to and from the lavatory. At noon the same day she suddenly collapsed and became grey and pulseless. Four hours later she had made a partial recovery, after taking alcohol by the mouth, and was moved in an ambulance to hospital.

On arrival at hospital she was still cold and collapsed and of a pale grey colour, but was quite capable of a humorous conversation, and her radial pulse was now easily palpable with a rate of 80 and a regular rhythm, although it was very irregular in size, with an occasional dropped beat, and sometimes runs of pulsus alternans. The apex-beat was just outside the nipple line in the fifth space, and neither visible nor palpable. The heart sounds were extremely soft and muffled, with tic-tac rhythm, and only heard at the apex. During the night she became warmer and brighter for a few hours. At 8 A.M. the next day she asked for a drink, but collapsed and died while it was being fetched.

Post-mortem Examination.

The body was that of a heavily built, somewhat flabby woman. The abdominal cavity contained slight excess of clear fluid. The pericardium contained at least one pint of slightly clotted blood. No ante-mortem clot was obvious. There was some effusion of blood into connective tissue around the aorta, reaching into the root of the neck. In the anterior wall of the left auricle was a large ragged tear about one inch in length. The wall of the auricle was very thin and atrophied. No ulceration or atheroma was noted. The ventricular walls were very soft, friable, and

somewhat thin. The mitral valve showed patches of atheroma on the flaps and was relatively incompetent. The tricuspid valve was normal. The aortic valve cusps were somewhat thickened. The pulmonary valve was normal. The aorta showed extensive nodular atheroma throughout its whole length, but no rupture was found. The coronary orifices were surrounded by atheroma, but were nowhere obstructed; their lumen was rather wide, and there was marked atheroma of all the arteries. The pleural sacs had no adhesions or free fluid. The lungs were congested and collapsed at both bases. The liver and spleen showed marked cardiac congestion, but the pancreas was normal. The kidneys were somewhat swollen and fatty. In the intestines were numerous diverticula the size of peas distributed throughout the descending colon, sigmoid, and rectum.

It is interesting to try to picture the course of the lesion according to the symptoms displayed at various stages of the history—i.e., (1) originally, (2) early the next morning, (3) at noon, (4) on arrival at hospital, and (5) during the next night. It is also puzzling, in view of the autopsy notes, without any signs of infarct, to account for rupture of the auricle, especially without any exertion. The symptoms were never distressing enough to be diagnosed as anginal, and no one who saw the patient (including a cardiologist of repute) was able to get nearer the diagnosis than "cardiac." Probably the earlier symptoms were vagal, though the sudden ending and the absence of signs of hæmorrhage before it would seem to contra-indicate the probability of early leakage.

London, S.W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

Treatment by Colloid Metals.

At a meeting of the Section of Tropical Diseases (to which members of two other sections had been invited), held on April 18th, Dr. J. B. Christopherson being in the chair, Sir Leonard Rogers communicated a paper by Prof. A. Paldrock, of Tartu, dealing with his observations upon

Leprosy in Estonia and its Treatment by CO_2 Snow and Solganal.

The isolation of lepers, he said, still had its adherents, and at the present day it was compulsory in Estonia, but he doubted its utility, and thought it must yield to more humane methods. In the beginning of 1928 Estonia had 235 registered lepers, the numbers having remained fairly constant of late years. Of 236 cases in 1926, 127 were of the tuberose form, 26 of the macular, 36 of the anæsthetic, and 21 each of the tubercular anæsthetic and the macular anæsthetic. Most of the victims were agricultural labourers. The source of infection was traced to the mother 19 times, father 13 times, sisters 17 times, other relatives 20 times, and was unknown in 149 cases. The leprosy germs were situated chiefly in the lymph spaces; they consisted of several granules surrounded by a protective envelope, the whole being probably evident as a rod-shaped appearance. These granules generated other granules, and they in turn became centres of reproduction. From the rod-shaped fragments buds were seen to burst, and on the ends of the fragments were umbels. He considered that the germ of leprosy was not a bacillus, but a trichomyces or thread fungus. The granules were found to contain free nucleic acid, and in the envelope nucleo-proteins were present. Free lipoid was found chiefly in the envelope, lipoproteins being principally in the granules where the lipoid-albumin compounds were combined with a Gram-positive and with a Gram-negative lipoid acid.

Prof. Paldrock compared the micro-chemical behaviour of leprosy germs with that of tubercle bacilli. He had been able to show that lepers had free complement in their blood; the quantity of complement indeed might be greater than that of normal serum. This was all to the good in CO_2 treatment, which was accompanied by a measurable consumption of complement. If a leproma was congealed by CO_2 snow at minus 73° C. changes were thereby produced in colloid equilibrium; there was a movement of albuminoid to globulin, and thence on to fibrinogen. After freezing there was a change to plasma stability as manifested by an accelerated sedimentation velocity of the erythrocytes, an acceleration which was demonstrable for 14 days after the application of snow. Congealing at one sitting five to ten sites on a healthy skinned person with a CO_2 rod 5 mm. in thickness—as was done in leprosy treatment—was followed by considerable shock, in which there was a sudden drop in the leucocyte count. In lepers the extent of this drop depended on the duration of the disease. During the course of the treatment with the snow there was a continual increase in the leucocytes. The released products of the leproma became absorbed and distributed through the body, causing a resolution of uncongealed lepromata as a distant effect. Thus CO_2 snow was a means of active auto-immunisation, and the remedy was regarded as specific.

The application of local cold should, said Prof. Paldrock, be limited to the time necessary for provoking a disturbance of equilibrium in the leproma. It sufficed to press a CO_2 rod 5 mm. thick on a leproma of small diameter for three to four seconds. More than a fortnight was needed for the shock of the cold to work itself out; hence the application should be repeated in three to four weeks' time. Only five to ten lepromata should be treated at a single sitting; otherwise the degree of protein shock would be too great. Patients freed of their leprous symptoms could not be regarded as finally cured; in four-fifths of the cases there was, two years later, the recurrence of trunk lepromata of minute size; but these disappeared more quickly than the original lesions after a single application of the snow. Having been deprived of their envelope the granules became susceptible to the action of such chemotherapeutic remedies as had an affinity with the substances in the granules. Such a remedy was solganal, which contained 36·5 per cent. of gold. By means of this preparation the Gram-positive leprosy germs of the body were transformed into Gram-negative ones; it also exerted a specific effect on the leprosy germs. Ten per cent. solutions of solganal, up to a total of 11 to 13 g., were borne without trouble. A sign of the weakening of the germs was the fact that they gradually lost their acid-fastness.

If after two years of CO_2 treatment a tolerance for cold had been established, a new and different shock must be brought into use, and for this purpose solganal was appropriate, as it provoked the mobilisation of fresh protective forces against the already weakened micro-organism. It completed the work already begun by the snow.

Sir Leonard Rogers also read a communication by Dr. F. G. Rose on a new method of obviating blockage of the veins in the

Intravenous Administration of Sodium Hydnocarpate

in leprosy. The method consisted in exposing the sodium hydnocarpate to the radiations of a mercury-vapour lamp. After this had been done the substance could be injected into smaller veins, and there was an absence of local irritation. If a small vein was chosen from the beginning the same vein could be used for the injections repeatedly, without causing any difficulty. Even small children tolerated the 3 per cent. solution. The radiation changed the colour of the solution from a light to a darker shade of yellow. To ascertain whether the radiation affected the activity of the drug controls were employed. Œdema of hands and forearms which somtimes followed the injections could be readily cleared away by applying evaporating lead lotion.

Dr. R. A. HENDRY said it did not yet seem clear that metals such as gold, mercury, and copper, in various forms, had a definite specific effect in the treatment of leprosy and tuberculosis. Of recent years attention had been chiefly centred on gold. Gold differed from most of the metals which had come into use as a result of chemotherapeutic work from the fact that it could not be combined directly with carbon; attempts had been made to combine gold with carbon through the intermediation of sulphur. He agreed that under the influence of CO_2 snow the metals might have a different action, but so far the results on the whole were disappointing.

Dermatological Experience.

Dr. HALDIN DAVIS said he had used certain gold compounds in lupus erythematosus, and to a limited extent in psoriasis. In 1913 Brook and Gluck used gold for lupus vulgaris, as a result of which they reported striking improvement, but not cure. Crysolgan was then largely used. In vitro it was found in a strength of one part in a million to restrain the growth of tubercle bacilli. In a series of 43 cases treated in this way 28 were cured, 6 were improved, 4 were in a stationary condition, 4 became worse. He thought these four had received an overdose. The drug which, in his experience, had been most useful in lupus erythematosus was sanocrysin, a combination of gold and thiosulphite. Lupus erythematosus seemed to him to have many affinities with tuberculosis, though it was still undecided whether it was a tuberculous manifestation or not. For the disease he was referring to, sanocrysin was, in his experience, more valuable than crysolgan. With regard to toxicity, 35 mg. of sanocrysin per kilo of body-weight was well borne by animals, so that a safe amount for a man of 120 lb. weight would be 2000 mg. Crysolgan was about half as toxic as sanocrysin. There were objections to the use of these drugs. After sanocrysin skin rashes were common, and after a small dose he had seen a pruritic rash on the arms and legs. These manifestations, however, were usually evanescent, and left no serious trouble. Stomatitis or ulceration of the tongue might occur. Dr. Drake had reported the occurrence of pustular eruptions in the scalp in a patient who was having sanocrysin for phthisis. The speaker had seen a case which after sanocrysin developed exfoliative dermatitis, causing the patient to be ill for a month. At the end of that time when the skin had recovered the lupus erythematosus was found to have disappeared entirely. The condition had lasted 16 years, and the patient had lost all her hair. Recently there had been a slight relapse, but a good new growth of hair persisted. In psoriasis the story of colloid metals was much the same as that of other drugs—namely, very unequal results.

Gold Salts in Tuberculosis.

Dr. F. G. CHANDLER spoke of the use of gold salts in the treatment of tuberculosis. In the last three or four years he had treated with sanocrysin 50 to 60 cases of pulmonary tuberculosis. At first large doses were given and severe reactions followed. At a later period he started with 0·1 g., increased to 0·25, 0·5, 0·75, and finally 1·0 g., until nine grammes had been given. He could not speak confidently about the therapeutic value of the drug, but he believed in its efficacy, and intended to persevere with it. After its use albuminuria was almost a constant feature, though, if slight, this might be practically ignored; but it was essential to examine the urine microscopically after each injection. If blood cells or casts were found the treatment was suspended until the urine became clear. Sometimes diarrhœa occurred, but it was ephemeral, and could usually be ignored. At the first sign of skin disease he stopped the drug and did not care to resume it. Vomiting might occur. Pain and sloughing might take place at the site of inoculation if any of the material were allowed to get outside the vein. He thought sufficient had been achieved to warrant a further exploitation of gold as a therapeutic agent in such diseases as leprosy and tuberculosis.

Dr. J. M. H. MACLEOD said that in his hospital department sanocrysin had been used a good deal, but he did not yet feel able to speak definitely as to results. He agreed, however, that better results had been obtained with sanocrysin than with crysolgan. Of 15 cases of lupus erythematosus under treatment a few had shown signs of improvement; in others the result so far was doubtful. He did not think there was any real connexion between this disease and tubercle; in many cases lupus erythematosus was associated causally with some septic focus. Some acute cases had reacted to the new B. W. & Co. antiscarlatinal vaccine. Probably a streptococcus was at the bottom of the trouble. No drug was yet known to have a specific effect on the tubercle bacillus, and he did not know of one which acted specifically and directly on the leprosy bacillus. With regard to freezing by CO_2 he spoke of his pioneer work with this method, and remarked that a three-second contact with a leprous lesion, under whatever pressure, did not seem likely to cause much result. If the organism responsible for leprosy were a streptothrix he did not understand the difficulty everybody experienced when trying to grow it. He thought the effect of irradiation on a colloid metal would be to render it inert.

Reply.

Sir LEONARD ROGERS said he had no personal experience of CO_2 in leprosy, but any method which would distribute a certain number of leprosy bacilli and set free antigens would produce some degree of immunity. The dose must be so regulated that no severe reactions followed, but it was only in certain early cases that the improvement went on long enough to clear the bacilli out. The method described by Prof. Paldrock was based, he thought, on the right principle. In some cases a simpler but efficacious method was to apply 25 per cent. trichlor-acetic acid. 5000 new cases of leprosy were now under treatment in various parts of the world, chiefly in Africa, and patients were returning week after week for their injections as they themselves believed in it.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this Society, held on April 19th, the chair was taken by Dr. J. HOWARD-JONES, the President, and a discussion on

BIRTH CONTROL

was opened by the Rev. GRIFFITH JONES. He spoke of the change of attitude towards this subject and of the falling birth-rate. In 50 years the birth-rate had decreased by more than half, and ours was now the lowest in Europe; within five years, at this progress, the birth-rate and death-rate would be equal. Man was on this planet, he thought, primarily to live his individual life to the highest possible extent and value for himself, and, secondly, to increase and improve his race by begetting healthy offspring. To these ends he was supplied with imperative instincts. Mr. Griffith Jones insisted that the "family instincts" were a set of organic instincts interlocked and combined into a group which was intended to remain a group and not to be separated into the components. The natural unit of society was the father-mother-and-child and not the husband-and-wife. Mankind was not endowed with sex propensities for their own sakes but purely as a means to an end, the production of offspring. Were it not for sex there would be no qualitative improvement at all, no upward movement from the amœba to man. Nearly all the beauty of nature was derived from some form of sexual attraction. For the perfect family relationship—so that every boy and every girl

should have both a brother and a sister—four was the complete family, and this was the number necessary to guarantee the continuance of the nation. Nature had forced mankind to graduate in the school of the higher virtues through the demands made on adults by their children. But for parenthood mankind would be no more moral than the creatures of the sea who spawned and swam away. In view of these considerations birth control as a policy must be regarded as illegitimate if it were undertaken for the sake of the parents, but permissible in the interests of the children. On purely biological grounds, those who got married with the intention of having no children were refusing the moral duty for which sex existed.

The Population Problem.

The rate of propagation of all species was nicely balanced with the length of its life and its chance of survival. Modern civilisation had upset this balance and interfered with the action of natural selection on survival, so that the prospect of over-population had been brought within reasonable limits of possibility. The periodic epidemics of the past had been beneficial to the race in carrying off weaklings; for 30 years after each of the great plagues there had been very little sickness. There was now a peril of initiating reversed selection unless some way could be found of selective breeding. Birth control so far had acted in just the wrong way and had been practised from an entirely private and personal point of view by those best able to produce and maintain good and healthy offspring. The cultured, educated, responsible, and highly endowed people were ceasing to reproduce their kind, while the improvident, vicious, and subnormal were breeding normally or even abnormally. It was time for those who believed in our breed to face facts and encourage a new eugenic ideal, so that birth control might cease to be a personal, negative matter and become a high, qualitative, eugenic measure. It was for medical officers of health to realise their immediate duty to encourage the right type of race.

The Tragedy of Over-maternity.

Dr. KILLICK MILLARD said that reproduction was the be-all and end-all of existence, and when we came to take liberties with nature we had to admit that we did not know precisely what the end would be. That, however, was no reason for saying that any interference with nature was wrong; we were interfering with nature at every step of civilisation. Referring to Paley's criterion of a moral action—its tendency to add to the general happiness—he said that the onus of proving birth control immoral lay on the shoulders of those who thought it would decrease the general happiness. Dr. Millard then spoke of the unhappiness of the childless marriage and the tragedy of the only child, and said that his advice to young couples was to make sure of some children first and not to put all their eggs in one basket. He then gave examples of the other side of the picture: the evils and misery of over-maternity, an aspect which fully justified birth control. It was too late now to discuss the ethics of the matter; what was pertinent was to discover whether the established practice could be directed into the best possible channels. A stationary population would simplify our slum, emigration, and employment problems, and so long as every country was equally affected the war problem did not arise. Even if nations were not equal, most people were beginning to think that a League of Nations and a pacifist policy were far better security against war than a large army.

Dr. STELLA CHURCHILL preferred the words "family limitation," for "birth" was susceptible of extremely little "control," and recommended Michael Fielding's "Parenthood, Accident or Design" to those who had to give advice on contraceptive methods. The international aspect of contraception was worthy of note; countries such as Italy and Ireland which were still under the influence of the Roman Catholic Church were having an increasing birth-rate, so that in a century or so the world might be dominated by the views of the largest section of the community. Discussion of birth control was absolutely forbidden in Ireland, even medical literature being under grave restrictions. Among Protestant nations families were being limited in the upper and middle and superior artisan classes, while the very poor, the mentally defective, and the inhabitants of overcrowded slums continued to multiply. Here again religion might play some part, for Jews as well as Roman Catholics were forbidden to limit families. Professional classes might be encouraged to have larger families by a system of free State education and great reduction of income-tax for incomes under £1000 per annum.

Woman's attitude to life had much changed since the days when her scope was limited almost entirely to personal relationships, and volumes of literature in deplorable taste had appeared. The increasing frankness and publicity surrounding the attitude of women to marriage might mar the delicacy of the relationship. Anything that would free her mind from anxiety was of value, but no method was more opposed to instinct than that known as the use of the "safe period." This meant that a brilliant solution for all difficulties was found in permitting men and women to have sexual intercourse when they did not want it and forbidding it on pain of pregnancy when they did. There was no doubt that fear of frequent child-bearing had a pernicious influence on the mother's health and temper, and that two years was the optimum interval between births. The dangers and difficulties of the only child could hardly be over-emphasised, and the ideal family was four or upwards, limited by the economic and physical condition of the parents. Birth control advice could most effectively be given at an antenatal and postnatal clinic, and Dr. Churchill had always thought it to be as much a part of her duty as a clinic medical officer to arrange proper spacing of the family as to prevent constipation or treat varicose veins. It was unfortunate that attempts had been made to do this work at infant welfare centres where equipment was totally unsuitable. Finally, it was the wanted child that was going to make the best citizen; the unwanted child was a source of unhappiness to its parents and itself, and its mind was built up on an unhealthy basis.

Practical Work in Family-spacing.

Dr. HELENA WRIGHT described the work being carried on at the North Kensington Women's Welfare Centre. This was supported privately by a group of people who believed in contraception, knew that the public were determined to get it, and wished to supply the poorer classes with the best possible advice. Patients went through the following routine:

A specially trained secretary took particulars which included the family and marital history, the reason for attending the clinic, and the means hitherto relied on to prevent conception. Most interesting statistics were obtained from these data. The patient then visited a doctor, always a woman and preferably a gynæcologist, who took a careful medical history and made a full pelvic examination with a speculum, and decided what contraceptive appliance would be most suitable for the particular case. A midwife then explained carefully how to use it. The woman went home to practise its use for a week, and was advised to avoid risk of conception during that time. At the second visit she fitted the cap herself, and if she seemed to understand its use she was asked to report every six months, and to return at any time for the discussion of difficulties. If she did not seem to understand, she was re-taught patiently.

The general method advised was a double one: a rubber cap and a chemical spermaticide. The Dutch, the pro-race, and the Dumas cap were all used, and each had its special indications for which neither of the others was suitable. The pro-race was valuable in a lax vagina with a low uninjured cervix which

it could be made to fit exactly. The Dumas was used for the very short cervix with lax vaginal walls unable to retain a Dutch cap. The most recent spermaticide was the Parke Davis 2-grain hypodermic tablet of quinine and urea hydrochloride which was placed within the concavity of the cap next the cervix. It was odourless and non-greasy, and the experience of 14 months showed that it was efficient enough to render the douche unnecessary. This was an important improvement on the "cap" method.

The records being accumulated by the clinic were very valuable, and it was hoped before long to be able to give an answer to several vexed questions. In judging results, facility and comfort in use must be considered as well as technical efficiency. Over 1660 patients had attended the clinic. In estimating results none was called "good" unless it was known positively that the method had been used for at least six months with comfort and success by a woman previously fertile. Of the first 50 patients at the clinic 29 showed good results, and among these there were eight failures for the following reasons: neglect to use the pessary (four); pelvic difficulties, neglect to syringe properly, nervousness, and habitual constipation (one each). The average wage among these families was £2–£3 a week. Among the first 100 women fitted with the latest developments, 59 reported good results for at least six months. There was one failure for no discoverable cause, one due to neglect of syringing, one to use of a broken pessary, and five from neglect to use the cap. No woman who subsequently wanted a baby had failed to have one on giving up the use of the contraceptive.

Mrs. HODGSON described a rural clinic experiment she had recently seen in California; the unit included an emergency ward and a room where advice was given on different days on infant welfare, tuberculosis, venereal disease, and therapeutic birth control. Very poor people of low mentality found present methods difficult to learn; it was to be hoped that some simpler way would be found for them.

Mr. GRIFFITH JONES briefly replied.

The PRESIDENT, in proposing a vote of thanks, observed that in his town the death-rate had exceeded the birth-rate during the whole of the first quarter of this year, though the deaths had not been remarkably numerous.

LIVERPOOL MEDICAL INSTITUTION.

At a pathological meeting of this institution on April 11th Mr. C. ALEXANDER WELLS read a paper on

Congenital Anomalies of the Ureter.

After referring briefly to the embryology, he described a series of cases in which he had prepared diagrams of the cystoscopic appearances and lantern slides from radiograms. These cases included five examples of reduplication of the ureter on one side, and he pointed out the importance of recognising this abnormality and of instituting adequate investigation in order to avoid mistakes in diagnosis, such, for instance, as passing an opaque catheter up a healthy ureter, some distance away from the doubtful stone shadow, when a second instrument passed along the second ureter on the same side would demonstrate its true nature. He briefly described the morbid anatomy of the kidney in these cases and, after passing rapidly over congenital cystic kidney, simple and crossed dystopia and unilateral absence of the kidney, spoke on the subjects of congenital dilatation of the ureter and ureterocele. He showed the cystoscopic and radiological findings in the case of a boy of three with enormous dilatation of both ureters, with their pelves and calices, without any demonstrable obstructive lesion—in fact, with widely patent ureteric orifices on both sides, conforming to the recognised though rare type. He further submitted two adult cases which he said were representative of the segmental congenital dilatation of certain authors and described, in connexion with them, a reflux up the ureters of the contents of the bladder, synchronous with respiratory movements and indicated by the excursions of a flake of mucus. This sign he suggested was characteristic of a more or less dilated ureter plus a fixed patent orifice, and he said he had noticed it also in tuberculous infection of the ureter. The paper was concluded with two cases of ureterocele or ureteric balloon.

In the discussion which followed, Mr. FRANK JEANS spoke of the pitfalls associated with congenital absence or misplacements of one kidney. Dr. NORMAN CAPON referred to two cases of congenital dilatation of the bladder and ureters described by him some years ago in association with Dr. Fordyce. Mr. R. KENNON doubted the congenital nature of the segmental dilatations, and Mr. J. T. MORRISON referred to the difficulties of diagnosis due to disease complications of anatomical variations and described a case of calculus occurring in a ureterocele.

Reviews and Notices of Books.

PROTOZOOLOGY.

A Manual for Medical Men. By JOHN GORDON THOMSON, M.A., M.B., Ch.B., Director, Department of Protozoology, London School of Hygiene and Tropical Medicine; and ANDREW ROBERTSON, M.B., Ch.B., Lecturer and Milner Research Fellow in the Department of Protozoology. London: Baillière, Tindall and Cox. 1929. With four plates and 220 text-figures. Pp. xvi.+376. 30*s*.

DURING the past few years a number of books on the medical aspects of protozoology have been published, each having special features. This work occupies a place of its own. It is written expressly for medical men and deals largely but not entirely with those protozoa which are human parasites. Though each organism is fully described the general arrangement of the book is based on the disease-producing powers rather than on the zoological status, the pathology of the infections occupying a prominent place. For these reasons the order in which the parasites are presented to the reader is not that of the systematist, but rather that of the clinician or pathologist, the important malarial parasites occupying first place. However, sufficient attention is given to the allied parasites of animals to enable the student to realise that human beings are not the only hosts afflicted, and that the study of animal infections may at times throw considerable light on those of man.

The book begins with a short introduction which deals with such subjects as the structure of the cell, the methods of multiplication, and the classification of the protozoa. The reader is then introduced to the malarial parasites of man, of which the morphology, differentiation, life-history, transmission, cultivation, and pathology are described in about 60 pages, with a note on immunity and the complication of blackwater fever. There follows a short section on the allied parasites of animals. The account is clear and concise and the student who reads the section carefully will find in it all that he requires to know. It is noteworthy that the authors adopt the view that there are three well-known species in man and regard others which have been described as of doubtful authenticity. Attention is drawn to artefacts in blood films; various objects to be seen under a microscope are illustrated in a coloured plate, so that confusion may be avoided. A short section on coccidiosis includes an account of the notorious coccidia of fish which may be encountered in human fæces and which led to the erroneous assumption that they were human parasites. This is followed by sections on piroplasmosis, hæmogregarines, and the gregarines. Seventy pages are devoted to the consideration of the intestinal amœbæ of man, certain forms in animals,

and coprozoic amœbæ. The pathogenic *Entamœba histolytica* receives the same close attention as is accorded to malarial parasites. Under the heading flagellates are considered those which are parasitic in the intestine of man, the leishmania, and the allied trypanosomes. The section devoted to the intestinal forms is followed by a useful account of the methods of examination of fæces for protozoa and the common objects which may be encountered and may cause errors in diagnosis. As regards the leishmania, the recent work carried out with sand flies and the possibility of transmission of kala-azar and oriental sore by the agency of these flies is fully discussed. The section on the trypanosomes is sufficiently comprehensive and is followed by short accounts of the ciliates and the sarcosporidia. This completes the consideration of the protozoa, but certain intracellular bodies of doubtful nature, such as anaplasma, bartonella, rickettsia, and the undetermined toxoplasms are also described. Spirochætes, though admittedly not protozoa, are carefully and fully dealt with for the convenience of medical men. A section on technique as applied to the study of parasitic protozoa and a glossary of the derivations of certain names and terms complete the volume. The authors have caused Greek words to be written in Roman characters for the benefit of those who are unacquainted with Greek, but it seems to us doubtful if they will appreciate the change.

The work is beautifully got up and illustrated. Students at the London School of Hygiene and Tropical Medicine and similar teaching institutions, for whom the book was primarily written, are fortunate in having presented to them in such an attractive form the important facts of medical protozoology.

SURGERY.

Problems in Surgery. University of Washington Graduate Medical Lectures, 1927. By GEORGE W. CRILE, M.D. Edited by AMY F. ROWLAND. London and Philadelphia: W. B. Saunders Company, Ltd. 1928. Pp. 171. 18*s*.

IN this volume of collected graduate lectures Dr. Crile sets out interesting and original observations on half a dozen subjects. The first lecture on the management of the acute infections expresses orthodox views in a concise and attractive manner and the author's own epigram of "cut and quit" well illustrates his argument. In the lecture on malignant and premalignant conditions the use made in the Cleveland Clinic of Surgery, Radium, and X Rays is well summed up, and valuable statistics of results in the treatment of cancer are given. The third chapter, on operations on the bad-risk patient, contains the fruits of the work of Crile and his associates on shock and allied conditions. The use of diathermy to maintain the body temperature during and after operation is, so far as we are aware, new in this country, and merits trial; but we find it difficult to place as much faith in blood transfusion for bad-risk cases such as are not directly due to hæmorrhage as appears general in America. Of hyperthyroidism Dr. Crile writes with the immense experience of 17,759 operations on the thyroid gland behind him; he stresses the importance of the amount of tissue to be removed. The picture of the extreme case requiring almost total removal of the gland as "a temperamental young married woman, with a faithless husband, a sickly child, insufficient income, quarrelsome relatives, and infected tonsils" makes one admire, but with a tinge of regret, an operative mortality of 0·8 per cent.! The fifth lecture is a diagnostic and operative clinic on the surgery of the gall-bladder, stomach, and breast, and the final one deals with some of Dr. Crile's views on the body as a bipolar electric machine. This last chapter, while full of stimulating speculations and possibilities, takes so much for granted that it fails to be convincing, and we feel that the author will have difficulty in inducing acceptance of his doctrine that life consists fundamentally in the maintenance of a difference in potential.

The book is admirably printed and illustrated and will provide many new ideas for the study of the critical reader. It must, however, be read with care because fact is not clearly separated from theory, and we can imagine that with Dr. Crile's personality behind these lectures the graduates who heard them may well have failed among the abundance of wheat to detect any chaff at all.

Surgery in the Tropics. By Sir FRANK POWELL CONNOR, D.S.O., F.R.C.S., D.T.M. & H., Lt.-Col. I.M.S., Professor of Surgery, Medical College of Bengal, Calcutta; and Surgeon to the College Hospital. London: J. and A. Churchill. 1929. Pp. 293. 12*s*. 6*d*.

THE author of this book prophesies that tropical diseases are likely to be distributed more widely now that aerial communication is becoming extensively used. Moreover the depressing effect of residence in a hot climate alters the whole outlook in surgical diseases, and thus arises the need for a book written by a surgeon actively engaged in practice in the tropics. On the whole Sir Frank Connor succeeds well in his attempt to write a supplement to the ordinary surgical text-book, bringing out the special methods found to be more effective under the conditions in which he lives and works. The novice plunged into tropical surgery would welcome rather more explicit directions as to treatment of such diseases as plague, which is dismissed in 16 lines, or Baghdad boil, for which the dose and frequency of administration of antimony tartrate is not given. The author's experience of the efficacy of intravenous iodine injections in septicæmic conditions including plague, and of the success of lymphangioplasty in elephantiasis is of especial interest since this operation has been abandoned in Europe. The management of ileostomy for intractable dysentery should receive fuller notice. The book is of small size and can usefully be added to the equipment of any practitioner proceeding to the tropics.

MATERNITY AND CHILD WELFARE.

By ETHEL CASSIE, M.D., Ch.B., D.P.H. Edin. London: H. K. Lewis and Co., Ltd. 1929. Pp. 228. 8*s*. 6*d*.

Dr. Cassie sets out to fill an obvious want by supplying health workers in maternity and child welfare with a book between the elementary type suited to voluntary and untrained helpers and the advanced type of little value to those without medical training. She has succeeded very well and has steered a straight course without much deviation to one side or the other. Here and there she has perhaps gone further afield into medical and scientific matters than will be appreciated by the audience she is catering for. Much of the chapter on embryology and related problems, particularly the attempt to discuss maturation and fertilisation of the ovum, transmission of hereditary factors by the chromosomes and Mendelian laws, will be found too condensed to be of any educational value to a health visitor.

The first of the three sections into which the book is divided is mainly taken up with the administrative duties of the health visitor—in the home, at the antenatal and infant clinic, and at special clinics and institutions. A chapter on the health visitor and the midwife may raise some resentment among midwives, for it begins by saying that the health visitor is often required to act as inspector of midwives, and its message appears to be addressed largely to those acting in this capacity. The better trained and experienced midwives are inclined to object to the inspector who has no more knowledge of midwifery than that acquired during training for the C.M.B. certificate. Unless she has had the responsibility and experience of having herself practised as a midwife she can neither appreciate the difficulties under which these workers carry out their duties,

nor inspire in them that confidence which they ought to feel in a teacher and adviser.

Section II. is occupied with physiological and hygienic matters—infant feeding, food values, weaning and child management; and Section III. with pathological states—the premature, feeble, and ailing infants, metabolic disorders and infections, together with diseases of special sense organs, throat and nose, and mental deficiency. All of it will be of value to health workers.

Though in this book the matter is clearly set out and the teaching generally is sound, the whole lacks inspiration. Something is wanting to make the dry bones live; possibly it is more of the human side and a little humour. The paragraph headings of "The Hostile Grandmother" and "Interfering Neighbours" raised our hopes, but without justification. It is possible, however, that a lighter touch would not be appreciated by many of those who take their work most seriously, being sensible of its fundamental importance. Dr. Cassie has supplied a text-book which contains an adequate presentation of what a health visitor should know and will doubtless have many and grateful readers.

THE CONSTITUTION OF SUGARS.

By WALTER NORMAN HAYWORTH, D.Sc., Ph.D., F.R.S., Professor of Chemistry in the University of Birmingham. London: Edward Arnold and Co. 1929. Pp. 100. 8*s.* 6*d.*

THE discovery by Emil Fischer of two methyl glucoside derivatives of glucose led to the recognition of the fact that the ordinary open chain aldehyde form of glucose represents an intermediate form between two stereochemical α and β glucoses which had of necessity to possess a cyclic structure. The particular structure selected was that of a five-membered ring composed of four carbon atoms and one oyxgen, though the possibility of alternative rings was not excluded. With the preparation by Purdie of the methylated sugars a new mode of investigating the nature of the heterocyclic ring was created, and by this means the St. Andrew's School, largely under the direction of Principal Irvine, did much to elucidate the inter-relationships between the various derivatives; it is, however, the merit of Haworth and his co-workers to have set the coping-stone upon this work by providing unequivocal proof as to the nature of the ring structure concerned. Basing upon these researches the author has suggested a new nomenclature, according to which pentoses and hexoses are to be termed respectively furanoses and pyranoses, in order that their relationship to the heterocyclic compounds furan and pyran shall be indicated in their names. This volume, which incorporates some of the manuscript prepared by the author for a course of lectures delivered at the Universities of Bâle, Zürich, Heidelberg, Neuchâtel, and Mulhouse, sets forth in simple language the brilliant reasoning and ingenious experimentation by means of which the constitutions of the sugars have been deduced. Those who have not had the opportunity of reading the original papers should be grateful to the author for having provided them with this lucid summary of our present knowledge of the constitution, not only of the monosaccharides, but of the di, tri, and polysaccharides as well.

EXPERIMENTELLE NEUROLOGIE.

Physiologie und Pathologie des Nervensystems. By E. A. SPIEGEL, Assistant in the Neurological Institute of the University of Vienna. Part I. With 69 illustrations. Berlin: S. Karger. 1928. Pp. 281. M.24.

Dr. Spiegel believes there is a need for a comprehensive text-book dealing with experimental neurology, by which is understood not merely neurophysiology in a general sense but also experimental neuropathology, and he has undertaken to attempt to fill the gap. This first part of his text-book is certainly full of promise; it deals at the outset with general theories of neural function and proceeds to investigate reflectivity. At this point the studies interest the clinician, since reflex changes following different organic conditions are fully described. A second section deals in similar fashion with the vegetative nervous system. In this way the reader is given a précis of the anatomy, physiology, experimental pathology, and pathogenesis of mechanisms whose clinical function he studies in health and disease. A book of this kind is really useful.

LARYNGOLOGY AND NEUROLOGY.

Kehlkopf und Rachen in ihren Beziehungen zu den Erkrankungen des Zentralnervensystems. By Dr. BELA FREYSTADTL, Budapest. Berlin: S. Karger. 1928. Pp. 326.

Dr. Freystadtl's monograph covers the field gleaned by the laryngologist on one side and the neurologist on the other. A review of this kind serves a useful purpose in linking up divergent studies; some 200 pages are allotted to a systematic description of the laryngeal features of disease of muscle, peripheral nerves, cord, brain-stem, and cerebrum. This is excellently arranged; much of the information here collected embodies rather out-of-the-way data of which it is helpful to be reminded. The laryngeal semiology of functional conditions such as hysteria, neurasthenia, and occupation neuroses is followed by a final section on laryngeal spasms and involuntary movements of various kinds, inclusive of so-called palatal nystagmus.

A critical perusal of the monograph has not revealed any material omission; it is a model of what such contributions should be, being well illustrated and well documented.

LES ABSCÈS DU POUMON.

By MICHEL LEON-KINDBERG. Paris: Masson et Cie. 1928. Pp. 134. Fr.14.

THIS is one of a series of short volumes dealing with special medical and surgical conditions. The book contains much useful information and it is up to date, although its scope does not allow more than the merest reference to many important matters. The first 94 pages deal with the causation, physical signs, symptoms, diagnosis, and the various types of abscess, and only 30 are devoted to treatment, of which one is given to artificial pneumothorax and less than a page to thoracoplasty. The bibliography extends over ten pages and will be found very useful by those who wish to make a more exhaustive study of the subject. The diagrams are clearly drawn and helpful. There is no index.

BACTERIOLOGY.

A Text-book of Micro-organisms. First edition. By FRED WILBUR TANNER, Professor of Bacteriology and Head of the Department, University of Illinois. New York: John Wiley and Sons, Inc. 1928. Pp. 548. 22*s.* 6*d.*

THIS is an original and courageous book upon bacteriology. Its author has had the vision to discard the trammels of tradition and to write on bacteriology without any systematic description of species, or any account of methods of staining or the preparation of media; one looks in vain for such words as "Agar" and "Gram" in the index, and their absence increases one's interest in examining the book. It is indeed a welcome change from the stereotyped variety of text-book, and whilst it is quite unsuited to the medical student, may be read with profit by those seeking higher or special qualifications in which a knowledge of bacteriology is essential. The purely medical aspects of the science are scantily dealt with as incidentals, and the main theme upon which the book is constructed is the general biology of micro-organisms with a certain bias towards commercial

application. It is written in a jerky, condensed, and didactic fashion, and is consequently not easy to read, but it is a notable contribution for which most teachers of bacteriology will be grateful to the author.

REGIONAL ANÆSTHESIA.

By GASTON LABAT, M.D. Second edition. London and Philadelphia: W. B. Saunders Company, Ltd., 1928. Pp. 1065. 15*s*.

THIS second edition of a well-known treatise has been extensively revised and somewhat enlarged. It remains one of the best works on the subject in the English language. The author has the gift of clear exposition and is an ardent exponent of local anæsthesia, yet his enthusiasm is tempered by the judgment of experience. The general discussion on the use of regional anæsthesia in Chapter XIV. is especially valuable. Dr. Labat's views of the scope of regional methods coincide with those of most workers, with the notable exception that he seems still to retain a place for paravertebral anæsthesia in abdominal work. Local anæsthetic methods, valuable as they are, must always depend on the selection of suitable patients. A recognition of this fact seems to have crept into this edition, enhancing greatly the value of the author's recommendations. There are many new pictures of great beauty and clearness. Changes are particularly noticeable in the sections on the head, neck, and limbs. There is also a much amplified section on subarachnoid anæsthesia, which has recently appeared in the same form in the new Nelson "Loose Leaf Surgery."

Every surgeon should read this book even though he does not practise the methods of local anæsthesia.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXII. Pp. 173–348 April, 1929.—The number is dedicated to Sir Frederick Andrewes (of whom an excellent portrait is presented) in celebration of his seventieth birthday on March 31st, 1929.—Further observations on the oxidation by bacteria of compounds of the paraphenylene diamine series, by S. Ellingworth, J. W. McLeod, and J. Gordon (Leeds). Further data on the production of coloured compounds by bacteria by oxidation of paradiamines, some of which are useful in isolation and identification.—Tumour immunity: natural cytotoxins (heterotoxins): protection of cells against homologous antibodies, by T. Lumsden and A. C. Kohn-Speyer (London). The fresh serum of normal animals contains non-specific cytotoxins which destroy the normal tissue cells and the tumour cells of other species. The tissue cells and tumour cells of an animal are protected against damage by homologous cytotoxins, whether pre-existent or experimentally produced.—Immune reactions and cancer, by F. C. Pybus and H. R. Whitehead (Newcastle). No evidence could be obtained of the existence of antibodies common to malignant cells from different animal species.—The effect of certain factors upon the growth of the pneumococcus, by H. D. Wright (London). For full growth the pneumococcus requires nitrogenous substances (which are adequately supplied by ordinary peptone), some fermentable carbohydrate, and some unknown relatively thermolabile substances which are abundant in blood and yeast, and occur in smaller amounts in meat extract, serum, and peptone.—The effect of growing smooth and rough cultures in serum, by J. A. Arkwright and R. M. Pitt (London). Culture media containing serum with somatic agglutinins for a smooth strain of the typhoid bacillus have a strong tendency to convert a smooth culture into the rough form in one or two weeks.—The fate of colloidal iron administered intravenously, by C. J. Polsen (Manchester). The excess of iron is stored mainly in the liver.—On the rôle of the reticulo-endothelial system in trichinellosis, by S. B. Rybinsky (Kier). Intravital staining with trypan blue of artificially infected mice shows that histiocytes accumulate about the worms especially at the poles of the capsule.—Antivaccinial serum, by C. H. Andrewes (London). Generalisation from intradermal or intravenous inoculation can be prevented by an adequate dose of immune serum. Serum which reaches the tissues five minutes before the virus is far more effective than when the virus is five minutes ahead of the serum.—The Schick reaction and circulating antitoxin, by A. T. Glenny and Hilda Waddington (London). Guinea-pigs are Schick-negative if their serum contains at least 1/250″ unit of antitoxin per c.cm.—The importance of thermolabile streptococcal toxin with special reference to its cytolytic effect on leucocytes, by H. A. Channon and J. W. McLeod (Leeds). Hæmolytic streptococci, in addition to the well-known very thermostable Dick toxin, produce a thermolabile toxin with a vigorous leucocytolytic action which is probably of more importance than has been supposed.—Two cases of myelomatosis: (1) diffuse plasma celled, (2) with tumour-like masses and visceral lesions, by D. F. Cappell (Glasgow).—An improved medium for the isolation of *C. diphtheriæ*: trypsinised serum tellurite copper sulphate agar, by V. D. Allison and T. H. Ayling (London). Copper sulphate inhibits spreading *proteus* organisms which may be very inconvenient.—Hydatid infestation (*Echinococcus granulosus*) in sheep, oxen, and pigs, with special reference to daughter cyst formation, by N. H. Fairley and R. J. Wright-Smith (Melbourne). *Echinococcus granulosus* is the new name for *Tænia echinococcus*. The authors give a very thorough study of the occurrence and anatomy of its hydatid phase in sheep, pigs, and oxen, and discuss fully the formation of the daughter cysts. They refute the theory that daughter cysts may arise within the cuticle.—A case of malignant hæmangeiomatous endothelioma, by J. Gray (Aberdeen).—A new design of microscope lamp, by C. E. Jenkins (Salford).—The incidence of primary carcinoma of the liver in South India, by P. N. Basu and A. Vasudevan (Madras). The condition is much more frequent than in Western Europe.

Reports and Analytical Records.

ROTHMAN'S RHODESIAN CIGARETTES.

(ROTHMAN'S LTD., 5 AND 5A, PALL MALL, LONDON, S.W.1.)

THESE cigarettes are made of Rhodesian Virginian tobacco. Each cigarette weighed 1·22 g.; approximately 23 cigarettes weigh 1 oz. The paper of each cigarette weighed 0·047 g. On analysis the following results were obtained:—

Moisture	11·50 per cent.
Ash	8·66 ,, ,,
Sand	0·42 ,, ,,
Nicotine	1·00 ,, ,,
Oil	1·60 ,, ,,

These cigarettes are well made, of even texture, and do not irritate the throat when smoked. The low percentage of ash and sand shows that the tobacco is carefully selected and of the Virginian type. The nicotine is distinctly low as also is the oil.

FLORANGE.

(CLEEVES, LTD., CLEEVEDALE PARK, LONDON, S.W.4.)

"Florange" is a fruit syrup with a most refreshing, agreeable, and pleasant flavour of oranges. For use one part is mixed with 4 to 5 parts of water or soda-water. On analysing the syrup the following results were obtained:—

Sugar	65·9 per cent.
Water	31·2 ,, ,,
Acid (as citric acid)	2·18 ,, ,,
Ash	0·05 ,, ,,
Non-sugar extractives, fruit fibre, essential oil, &c.	0·67 ,, ,,

These figures show that "Florange" is made of materials of high quality. No preservatives were detected.

THE LANCET.

LONDON: SATURDAY, APRIL 27, 1929.

THE KING'S CONVALESCENCE.

HIS MAJESTY'S message of thanks to his people has been followed by the welcome news that his convalescence is now assured, and that no further daily statements as to his progress will be issued. The medical profession has followed with anxious interest every stage in the story of his long illness which began five months ago, the first formal bulletin being issued on Nov. 21st, and will join with a special pride in the national sense of thankfulness that the measures adopted for the KING'S treatment have ended so happily.

THE EFFECTIVE USE OF RADIUM.

THE Radium Subcommittee, whose report we summarised last week, stated that the amount of radium available to-day, although greater than it was in 1926, is quite inadequate even to cope with the most pressing needs of medical treatment. While technical methods have been elaborated for the treatment of cancer by radium in almost every region of the body, the radium required for the purpose is not there, and no common policy exists among the hospitals for its acquisition or use. The Committee recognises that for many years to come research and treatment must continue to be intimately associated if progress is to be made, for our present knowledge is not adequate even to decide whether the gamma radiation, which is the essential part of radium therapy, is best applied at close quarters to malignant growths within the body or whether the future lies rather with massive doses of penetrating rays applied at a distance. It may be recalled that the first medical men to use radium therapy were the dermatologists, who applied radium to the surface of more or less superficial growths. The next advance was made by the clinical pathologists, DOMINICI and REGAUD, who treated growths by actually inserting the radium. Since their work began great advances have been made in surgical radium therapy, and in this country interest has developed on the side of surgical technique (in many cases it must be said most ingeniously) to the comparative neglect of the possibilities of treating cancer by external radiation with a large quantity of radium. Obviously, there can never be such a thing as uniformity of irradiation of a tumour by the method of insertion of tubes, needles, seeds, or any other such sources of radiation. Take, for instance, any one of the usual methods for treating inoperable carcinoma of the neck of the uterus; the insertion of tubes into the cervical canal, along with applicators or needles to supplement their action, inevitably leaves some regions of possibly invaded tissues inadequately irradiated. A malignant growth of the tongue in which the glands are already involved discloses a distribution of malignant cells which would tax a geometer to irradiate uniformly by embedding tubes. The problem is still more difficult in the case of a tumour of the breast with all its possible ramifications. This has not discouraged so courageous a worker as G. L. KEYNES, and his results are certainly not to be despised. But when the numerous tracks of growth in such cases are visualised, does it not seem rather much to expect that any implanting of radium tubes can cope satisfactorily with advanced disease?

For these reasons the method of applying gamma rays externally deserves the most careful consideration by those who are to put into effect the recommendations of the Radium Committee's report. In the view of a correspondent (see p. 898) whose experience carries weight, the logical development of our present-day knowledge is the use of large quantities of radium at a distance from the body. Let us suppose that a deep-seated tumour is exposed to the gamma rays from as much as 4 or 5 grammes of radium element, held at a distance of 10–12 cm. from the surface of the body. If the radium is placed in a suitable container the lateral spread of the rays can be prevented to some extent, and an almost cylindrical beam may be pictured entering the surface of the body and diverging only slightly in its passage through the tissues. A slightly conical zone of radiation extends from the incident to the emergent surface, the intensity gradually gettting weaker owing to increased distance and absorption. The question to be considered is this: can deep-seated tumours be adequately treated in this way, so that the malignant cells get the necessary dose without the skin suffering any serious damage? If the answer is in the affirmative, then the principle of selective action requires no further demonstration, and a method exists by which patients can avoid operation. Evidence is accumulating from the clinics of Paris, Brussels, and New York that these expectations are not groundless, but there has not yet been time for more than preliminary reports on this work. In this country there is no centre where the method is being tried. Individual gifts of radium are rarely big enough to supply the large amount of radium needed for this type of treatment. We trust that the national scheme outlined by the Radium Committee may lead to the formation of one or two centres where the value of the method can be determined.

PROFESSIONAL HOSPITALS.

WE publish on page 908 a letter above the signature "Forward," which contains the brave notion that the counter-actions implicit between a State hospital and a voluntary hospital system would disappear under a scheme whereby the medical profession itself would control and manage the institutions as part of the professional machinery—as "their own industry," in the words of the writer. The scheme follows on these two assumptions—first, that the arguments against a State service, which have been from time to time adduced in these columns, have been found convincing; and, secondly, that the weak places in voluntary hospital administration, as briefly brought forward, are of such a nature that the medical profession might be well advised gradually to withdraw their support of them. The alternative is the setting up of a system of hospitals, which for convenience may be termed "professional hospitals," to be managed by the medical practitioners of each area. At a time when the whole hospital administration of the country may be described as under public review in the light of recent legislation, "Forward's" communication invites comment.

The first reflection that his proposal evokes is that to a great extent hospitals, whether in receipt of State subsidy or conducted on the

voluntary principle, are at the present moment in respect of their great responsibilities conducted by the medical profession, and recent debates in the House of Lords during the passage of the Local Government Bill have indicated that there is no intention to change this fundamental principle of good management. But further reflection suggests that the proposal underlying our correspondent's letter implies both a yet wider and more intimate connexion between all the practitioners of an area and the hospitals in their immediate neighbourhood, while the erection of further institutions to receive public subsidy is contemplated, not, apparently, so much to meet an admitted shortage throughout the country of bed accommodation as to replace institutions conducted under systems which have been found wanting. It is, of course, out of the question that any immediate move towards the fulfilment of "Forward's" policy should be made, for economy of money, time, and effort alike would forbid such a course, but the scheme is a timely, if exaggerated, reminder of the professional ideals which, more and more, the enlightened public should be, and are becoming, willing to accept. Medical institutions must to-day be so managed that the actual work of general practice is brought into close relation with hospital administration. And this is a view which received wide approval when the Interim Report of the Consultative Council on the future position of medical and allied services was published nearly nine years ago.[1] This Report to the Ministry of Health, although made in circumstances which have in many directions altered, had for its chief message the need for a systematised provision of medical and allied services, to be applicable to a given area, and to be supplied by the medical profession as a whole, the general practitioner being the first link in a logical chain with the consultant, the specialist, and the medical auxiliary. Thus, in the Report, there will be seen the outline of an organisation which would have much the same general effect as that which is aimed at by "Forward," although time is postulated during which the necessary uniformity and inclusiveness of the proposals may develop. Our correspondent, and the many who we know will be in agreement with his scheme (however previous or revolutionary), must be prepared, we think, to wait while difficulties of detail are overcome, but their views will assist powerfully to bring about the position, desired by all, that the hospitals of each area should become the place in which the organised medical effort of the locality will be concentrated, and from whence its results will be distributed, while the part played by domiciliary medicine will assume its proper and paramount importance.

Reform along the lines emphasised by the Report of the Consultative Council had been projected in certain respects for many years by the British Medical Association, whose scheme for the establishment of hospitals, clinics, and treatment centres for different areas has much in common when dealing with institutional treatment. The great difference between the "professional hospitals" suggested by our correspondent, and the existing institutions, either as they are, or as they may be, lies in the method set out for election to the staffs. "Forward" writes: "Let the country be divided into suitable areas—smaller in towns, larger in the country. The medical practitioners of each area would combine to elect a staff of consulting surgeons, physicians, oculist, aurist, and the rest." The election to the staff is the great problem. The unworkable nature of the proposal thus summarily stated by "Forward" is obvious, and so are the waste and unfairness manifest in any principles which exclude the general practitioner from the staff. Apart from the intensive training of students, he is often the man whose counsel his colleagues would especially value, so that there should be the best opportunities for its supply. These are the large things which "Forward" makes us contemplate in his brief delivery, and the time for their contemplation is now.

[1] THE LANCET, 1920, i., 1183 et seq.

SOLAR DERMATITIS.

THE reaction of the skin to the sun's rays is peculiar to the individual. Some tan easily and others not at all. Red-haired persons, or the descendants of such, are prone to develop freckles, and instead of pigmenting are apt to suffer from a transient erythematous dermatitis, followed by desquamation of the exposed parts. Transient dermatitis may ensue on any skin which is exposed without precaution to a bright hot sun when there has been no gradual acclimatisation. These well-known phenomena vary according to the type of complexion inherited; they may be regarded as a specific response of the skin itself and hardly require further elucidation. There is, however, a group of cases in which the response far transcends any degree met with among the non-pigmenting brunettes. It is not a question of colour in these cases. They may be blonde or dark-skinned; in fact the latter seem to predominate, and it is clear that some other factor than a simple skin reaction is responsible for the irritable rashes which follow exposure, and which may be violent even when the pigment protection appears sufficient. The rashes may be urticarial, papular, or vesicular, or mixed, and exceptionally bullæ may form, which heal slowly and often leave scars. HUTCHINSON, who first classified these "summer eruptions," was alive to the fact of their solar causation, but could not, in the light of the science of his day, offer any satisfactory explanation of the dyscrasia. A clue to the underlying factor was first suspected after the introduction of the hypnotic drug sulphonal, when it was noted that some persons with an idiosyncrasy developed hæmatoporphyrinuria and a papular or vesico-bullous eruption, sometimes confined to, or at any rate more marked on, the face and backs of the hands, parts which are exposed to light. If albino mice are injected with a solution of sulphonal and kept in the dark they remain well, but if exposed to sunlight for any length of time they quickly die, often with a copious vesicular eruption. Some cases of congenital hæmatoporphyrinuria are also extremely sensitive to light, and it seems fair to assume the presence of some light-sensitising substance in the circulation of the affected persons. The nature of this substance is by no means clear. The large majority of cases examined have no hæmatoporphyrin in the urine, although some contain an excess of indican and other evidence of intestinal putrefaction. Two cases of which we have seen notes improved after a course of Plombières treatment, supporting the view that in some cases the responsible toxin is generated in the bowel and escapes the censorship of the liver or possibly gains direct access to the blood stream via the thoracic duct. CRANSTON LOW, whose views on allergy and sensitisation command attention, believes that other substances besides hæmatoporphyrin can act as the sensitising agent, and suggests

that they may be derived from cereals, especially wheat.

Our knowledge of the nature of these circulating toxins is much in the same position as in the case of urticaria, in which Sir THOMAS LEWIS has convincingly demonstrated the potency of histamine and histamine-like bodies, injected locally, in producing an eruption clinically indistinguishable from nettle-rash. It is not unlikely that the toxins responsible for urticaria and solar dermatitis may have a close molecular affinity, for a solar rash may be urticarial and nettle-rash may be papular and even vesicular, especially in the child. Present opinion favours the view that there is not one, but a series of protein molecules which possess the faculty of over-sensitising the skin to the normal stimulus of the sun, and until the biochemist succeeds in isolating or elucidating the metabolic origin of these toxins, our therapeutic measures will continue to be empirical. Moreover, responsibility for the reflex has not been fastened on any particular light rays. Last year at the Paris Medical Society [1] VALLERY-RADOT and others showed a sun-sensitive person, who had responded with an urticarial type of eruption for over 20 years. His reaction was strictly proportional to the intensity of the solar exposure; under ordinary conditions an eruption supervened five minutes after exposure, attained its maximum in one minute, and vanished within half an hour. With a carbon-arc (polymétallique) lamp consuming 30 ampères at 50 cm. distance a similar effect was produced in two minutes. A powerful incandescent lamp furnished with a reflector and working at a distance of 40 cm. produced the reaction in nine minutes, but exposure to the mercury-vapour lamp or to infra-red rays was found to be entirely innocuous, and the authors were able to achieve some degree of improvement in the disability by subjecting the patient to progressive doses, first of ultra-violet and later of daylight itself. This experience, if confirmed, would invalidate the view that the ultra-violet rays are more potent than other parts of the spectrum in eliciting an abnormal response. Heat rays seem to play some part in the mechanism of production, and that there may be a group of rays as yet unidentified, between the ultra-violet and red parts of the spectrum, which are more potent in this respect than either.

SMALL-POX: THE FRENCH RESTRICTIONS.

WE published last week some notes upon the present incidence of small-pox at home and abroad, stressing the effect upon the public mind which the possible distribution of nearly 1500 contacts from the *Tuscania* would necessarily have in this country. Details have been given now showing that, in spite of the extraordinarily favourable opportunity offered for the development of a widespread infection in a closed community on shipboard, only some 44 cases (with seven deaths) had occurred as a result of the case originally taken on board in Bombay, a seaman who was disembarked fatally ill from the disease at Marseilles. The whole situation was viewed in France with great apprehension, and, as that country relies for protection against small-pox upon universal compulsory vaccination to which no popular resistance is ever offered, it was logical that the French Government should propose, and in some places should exact, that no passenger from England who was not prepared with evidence of recent vaccination should be admitted to the country. But a conference between the British and French authorities has since been held at which the weakness, as a preventive measure, of the production of vaccination certificates was recognised on both sides, and, after the discussion of four varying proposals, machinery has been evolved under which, while Article 42 of the International Sanitary Convention, 1926, is followed, the British system of surveillance is also to be observed. An announcement from the Southern Railway states that until further notice passengers landing in France and not possessing a vaccination certificate "not less than ten days and not more than five years old" will require to fill up a sanitary passport—a yellow cardboard form to be obtained en route, when they will be kept under observation in France for 14 days if necessary, but passengers merely passing through France will experience no difficulty. Passengers who have been vaccinated within the required period will be given a receipt for their certificate of vaccination and for them no special or "health-passport" will be required. Others will retain part of the yellow form and will have to report themselves to the health office or *mairie* of the locality to which they go, and they will be unable to leave that locality within 14 days without notifying the authorities. It will be apparent that such a wide-reaching organisation as this will entail great trouble upon the French administration, for in effect the machinery is set in action against an undifferentiated population which is only employed in Great Britain upon a limited number of persons who have actually been in contact with the disease. But it must be remembered that the attitude of the French, as a properly vaccinated nation, is a perfectly correct one—how correct will be seen from the words of our Paris Correspondent this week. In France reliance is placed upon vaccination to prevent small-pox, and the French statistics prove that their reliance is justified. Their observations indicate that such cases of small-pox as occur are introduced from without, the sources of infection being derived from countries where the regulations for vaccination are less strictly observed. Having this situation in view the first impulse of the French authorities was to ensure that those coming to France should do as France does; but a closer consideration of the circumstances has convinced the French authorities that the compulsory vaccination of all incomers would not compass their objects, and it has now been decided, with infinite trouble to those authorities, that the British system of surveillance should be employed in lieu of compulsory vaccination.

In the meantime it would appear that the measure of the risk run by the British community through the distribution of contacts from the *Tuscania* has been taken. Notifications to local sanitary authorities should ensure the safety of the population, although an occurrence, which we report from Acton, reveals how ignorance may lead individual citizens to withhold from the sanitary authorities the information necessary for the accomplishment of public duties. Of 28 cases reported in England, 7 were from the Metropolis, 6 from Outer London, 7 from the North and 8 from the South; 13 of the Scottish cases occurred in Glasgow, 1 in Aberdeen. The date on which the last London case sickened was April 7th.

[1] Bull. Soc. Méd. de Paris, July 5th, 1928, pp. 1122–1125.

DONATIONS AND BEQUESTS.—The third Earl of Durham left £1000 each to the Durham County Hospital and the Gateshead Dispensary.—The first Baron Hollenden left £8000 to charities, including £1000 each to St. Bartholomew's Hospital and St. Mary's Hospital, Plaistow, and £500 to the Seaside Convalescent Home for Children, Birchington, Kent.—Mrs. Eleanor Barrett Palmer, of Mariston House, Newbury, amongst other benefactions, left £500 each to the Helena Nursing Home, Reading; the Hospital for Incurables, Putney; the Royal Berkshire Hospital, and the Children's Cottage Hospital, Cold Ash, Newbury.—Mr. John Henderson, of Glen Tower, Kelvinnorce, Glasgow, left £1000 each to the Western Infirmary, Glasgow, and the Royal Infirmary, Glasgow; and £500 each to the Victoria Infirmary, Glasgow, and the Royal Hospital for Sick Children, Glasgow.

Annotations.

"Ne quid nimis."

RAIN AS A SOURCE OF POTABLE WATER.

To most town-dwellers the idea of drinking-water from a rain-tank seems to belong to a past age, but country practitioners know well that many districts still find the cost of a piped supply prohibitive. Mr. Thiselton-Dyer has recently reported to the Ministry of Health [1] on an investigation he has made in three rural areas where rain-water is still in use for all domestic purposes. The usual method of storage is a circular underground tank built of brick and cement and fitted with a hinged wooden cover or stone slab with a cast-iron lid. In some districts the water is taken out by means of a pump in the scullery, but in most the only method is a bucket dipped into the tank. The size of the tank varies, but the usual aim is storage for two months' supply on a basis of ten gallons per head per day. In one area the local authority insists on a minimum 500-gallon tank. The new houses that are being built for town people, who know the delights of country life without its difficulties, have smaller tanks than those supplied in old cottages for folk who know all about the difficulties of dependence on rain-water. On the whole there seems no danger of drought, for the dry summer of 1921 has left no tales of graver shortage in these districts than was experienced where people depended on springs or rivers. With an average rainfall more rain seems to fall on the roofs than can be stored in the tanks, and the difficulty that has to be met is the expense of providing bigger tanks. Large supplies could be obtained from the roofs of churches and public buildings, but the expense of fitting them with good gutters and leading the water to large tanks would have to fall on the local authority. The state of existing gutters in cottages and bungalows varies considerably. Some of the tanks are simply fed direct from the neighbouring gutters, others are fed by stoneware pipes from all the gutters of the house. Sometimes there are no arrangements for cleaning the roofs or filtering the water; an old stocking may be tied round the pipe to serve as filter; sometimes domestic filters are used. Such a supply in a dusty village with factories might prove unsatisfactory, but in open country or hamlets the unfiltered roof water seems to give little trouble. In fact, in the districts inspected, there was no evidence of any ill-health from the rain-water supply, although in many cases the underground tank was at a lower level than the cess-pit and leaky cess-pits were observed. Since it has been found essential for the preservation of local amenities that each house should store its own water and not share a tank with neighbours, the water-supply of any household is only in danger of contamination by the excreta of members of that household. It is an interesting speculation whether this gives rise to a familial immunity which lasts until it is upset by the coming of visitors. Some people boil their drinking-water, but this practice is by no means universal. The tanks are cleaned out when they get nearly empty—which may happen once in two years—but not otherwise, as the people fear lest a period of drought catch them with emptied tanks. When the water becomes smelly a small lump of lime is thrown in to "clear" it. Nevertheless the water in most of these tanks looked clean, and there seemed to be no mud at the bottom.

It seems clear, as Mr. Thiselton-Dyer says, that "provided people are accustomed to a limited supply of water there is no reason why rain-water should not be looked upon as a direct source of supply where the cost of a piped supply is prohibitive." The problem is an immediate one, and not merely that of a number of old cottages, for over 30 districts are dependent on this water-supply, and the new houses and bungalows that are being built are constructed on the same system, except that the water is universally collected in iron gutters and led down iron pipes; slate and asbestos cement sheets replace the older tiles, and the tanks in the new buildings are protected from pollution. The kind of house that is being erected at the present time is a bungalow for four with a roof area of 575 sq. ft. and a tank of 1000 gallons capacity, thus providing—at the rate of five gallons per head—for a drought of the traditional 40 days. The Ministry's report points out that rainwater-supply requires supervision and control just as well-water does, and that local authorities ought to be authorised to make the necessary by-laws governing the capacity of the tank and its situation and construction. The size must obviously vary with the rainfall, the presence of secondary sources of supply and the uses to which the water is to be put—occasionally water-closets and even baths are supplied by a rain tank—but the by-laws must ensure adequate distance from any dung-heap, privy, or cesspool, according to the nature of the soil, and should provide that the tank be of slate, stone, cement-concrete, brick and cement, or metal. Wooden barrels are undesirable. If the tank is underground it should be lined with impervious material and should project six inches above the surrounding soil to avoid surface drainage. The supply tap should be three inches above the bottom to avoid drawing off sediment, which, moreover, is apt to be disturbed by a pumping apparatus. At a lower level there should be a drain cock unless the tank is underground, and the tank should be cleaned out annually. By-laws should also require proper provision for ventilation and removal of overflow, and should cover the institution of public supplies from such sources as the roofs of churches and other public buildings.

There are some other practical considerations that arise from the use of rain as a source of potable water. In smoky districts rain-water often has an unpleasant taste which it is extremely difficult entirely to remove, although filtration through charcoal or activated carbon may mitigate the drawback. Speaking generally, the use of rain-water is to be encouraged from the epidemiological point of view. If storage is watertight pollution from human sources becomes impossible, and although the excreta of birds and lower animals may be objectionable, the danger of disease being transmitted by them would seem to be remote. The rat, however, which is a sort of reservoir of leptospiral organisms, has an uncanny facility for reaching all sorts of apparently inaccessible places, and in a few instances typhoid bacilli have been isolated from the excreta of gulls. Should it be considered desirable to sterilise rain-water, this can readily be done by means of chlorine, permanganate, or excess lime. If heat is used it is sufficient to bring three parts of the water just to the boil and to add a fourth part when in five minutes the water will be safe to drink.

[1] Advisory Committee on Water: Report on Rural Water Supplies. 1929. H.M. Stationery Office. 9*d*.

PLAGUE PROBLEMS IN NORTHERN ASIA.

THE reports of the North Manchurian Plague Prevention Service are always eagerly awaited for the new light they throw on the ætiology of this disease. During the period covered by the sixth report, which is now before us, there were no severe epidemics of plague and no far-reaching investigations could be undertaken. In the summer of 1928, however, outbreaks of bubonic plague occurred in Outer Mongolia, Shensi, Shansi, and in Fengtien Provinces, resulting in 500 deaths, but the accounts of these outbreaks are not yet complete. Two communications in the present volume are from the distinguished pen of Dr. Wu Lien Teh, who edits the reports. He has reached the conclusion that the fleas of the tarbagan, as well as those of the susliks, or marmots, play an important part in spreading plague in winter as well as in summer. The period of hibernation passed by some of the wild rodents suffering from plague is not, as has sometimes been

assumed, a hindrance to the perpetuation of the disease, but is an indispensable link in the preservation of the virus. In the case of the tarbagan some of the animals show signs of recovery from the infection; more frequent probably under natural than under laboratory conditions. Dr. Teh believes that the pneumonic form of plague is dependent upon epizoötics and human cases of bubonic plague. Whatever is done for the eradication of these will eventually help to stamp out the pneumonic form. An article on the international aspect of the problem is worth perusal, as well as the descriptions of the ecto-parasites and the amœbæ of the tarbagan, the habits and nesting burrows of Transbaikal rodents, and a discussion of the problems of cholera and scarlet fever in China and Japan.

NORDISK MEDISINSK TIDSSKRIFT.

THE birth of a new medical journal is apt to provoke that sentiment to which Abernethy is said to have given voice on facing a large new class of medical students. But there is no need for pessimistic forecasts in the case of *Nordisk Medisinsk Tidsskrift*, as it has a very definite place to fill, and its sponsors are both numerous and influential. Already there are two classes of medical journal in the Scandinavian countries—the strictly national journals, published respectively in Danish, Finnish, Norwegian, and Swedish, and the inter-Scandinavian series of "Acta" published in English, French, and German. Now the new journal, a weekly, is inter-Scandinavian also, but it is published in one or other of the Scandinavian languages (all good Scandinavians read each others' languages), and so, at the cost of not being very intelligible to extra-Scandinavians, it has retained its Scandinavian character in word as well as in thought. The first two numbers follow conventional lines, a certain number of original articles being followed by short abstracts of other Scandinavian journals. The format is pleasing, and the technical work shows evidence of the professional hand. The regional editors are E. Meulengracht (Copenhagen), B. Runeberg (Helsingfors), R. Gording (Oslo), and G. Holmgren (Stockholm), while the editorial committee includes V. Bie, N. Rh. Blegvad, E. Warburg (Copenhagen), G. Becker, S. A. Brofeldt, F. Langenskiold (Helsingfors), O. Hanssen, O. Scheel, A. Tanberg (Oslo), H. Bergstrand, A. Lichtenstein, G. Liljestrand (Stockholm). Special subjects each have their own sectional editor, the names of whom appear on the title-page of the issue. The editorial offices of the journal are at Eriksbergsgatan 1 A, Stockholm.

THE RAY TREATMENT OF ANGINA PECTORIS.

THE treatment of angina pectoris has always constituted a difficult problem. No satisfactory medical procedure exists, and the operative therapy is uncertain and dangerous. One application of ray treatment is that introduced by Prof. A. Henriques, of Tulane University, who claims[1] to have relieved high blood pressure, with its attendant anginal attacks, by gamma rays from 50 mg. of radium applied for an hour to each side of the skull at a point just in front of and a little above the external auditory meatus. In France a number of communications[2] on the X ray treatment of angina pectoris have been made to the Société Médicale des Hôpitaux. An account of some of these is given by the editors of *L'Année Médicale Pratique*, in this year's edition of that valuable reference book.[3] The volume contains two articles by Dr. C. Lian and Dr. R. Barrieu, one dealing with results and the other with indications and technique, constructed from a large number of papers. Dr. Lian is also the editor of the year book. The authors' pathological investigations showed that angina pectoris is a wide syndrome, including all the paroxysmal conditions in the precordial region which are accompanied by thoracic constriction and pain radiating into the left arm. They term it "the cry of distress of the cardiac plexus." The sedative action of X rays on other peripheral and visceral syndromes encouraged their trial in angina; and after some initial reverses the authors claim to have evolved a method successful in 87 per cent. of cases. The relative insensitivity of muscle tissue to X rays prevents the treatment from having a bad effect on the heart; as they remark, the heavy doses given for cancer of the left breast do not cause cardiac injury. Nevertheless, the treatment should not be undertaken in the aged, in those with severe incompetence, or during crises, but diathermy may be applied in the attack. The authors prefer radiations of moderate penetrating power and minimal doses spread over a large number of treatment. Dr. A. Nemours's technique employs a 25 cm. spark, a filter of 5 to 6 millimetres of aluminium, a current of 2 milliampères, and a focal-skin distance of 30 cm. Applications may be made either from in front or behind. The anterior field is divided into two parts, the upper measuring 10 cm. by 10 cm. and situated over the second intercostal space, and the lower situated just beneath and a little to the outside. The posterior fields, of the same dimensions, are respectively above the spine of the shoulder-blade and below it. Irradiation is carried out for 20 minutes at a time, three times a week, only one field being treated at each session. The whole treatment takes from four to six weeks. A variation is that used by Dr. Marchal, who administers progressive doses. His factors are the same as those of Dr. Nemours, except that his tube current is 2·5 milliampères instead of 2; he irradiates a field 20 cm. in diameter situated over the inside of the third left intercostal space, and one of the same dimensions over the third dorsal vertebra. During the first week the patient receives three treatments of five minutes and about 200 Rontgen units each, two in front and one (the second application) behind. In the second week the time is extended to ten minutes, and so on, increasing at the rate of five minutes a week, until the end of the fourth week. A fifth week is given in particularly refractory cases. The authors consider that the progressive doses are preferable, as they attain the same results as the fixed dose with a smaller amount of energy. We look forward to the publication by English radiologists of their results with this form of treatment.

[1] The Radiological Review: Second Radium Number, 1929, ii., 97.

[2] Bull. et Mém. de la Soc. Méd. des Hôp., 1928, lii., 949, 1030.

[3] Eighth year. Paris: René Lépine. Pp. 621.

PREVENTION OF JUVENILE RHEUMATISM.

THE interest which has been aroused of recent years in the menace of rheumatism in childhood, and which was brought to a focus at the Bath conference last year, shows no sign of abating. On all sides there is evidence that physicians, hospital and school officers, and public health authorities are casting round for means by which the information collected at this conference may be applied to the prevention of rheumatism and its attendant evils. Dr. T. W. Hill, assistant medical officer of health of Willesden, has been at pains to set out[1] what he regards as the essential steps in prophylaxis, and he makes some suggestions which, even if they may be in some respects Utopian, can yet be of service in pointing towards an ideal. He emphasises the fact that the earliest premonitory symptoms of rheumatism frequently occur in the pre-school, not the school, age. If these children are to come under observation the provision of some kind of inspection in nursery schools is necessary. He regards as an essential preliminary to any effective campaign the registration of all "pre-rheumatic" children—i.e., children "of rheumatic heredity, direct or remote." He does not, however, attempt an estimate of the approximate number which this survey would include; it seems not

[1] The Medical Officer, March 23rd, p. 123.

unlikely that, according to the somewhat nebulous criteria at our disposal, this category would comprise a considerable proportion of the child population. Dr. Hill recognises the housing question as the main factor in causation which can be attacked at present. He puts forward a number of suggestions for the elimination of damp, and refers hopefully to the experiments in glass and concrete construction which have been described in America. On the vexed question of tonsillectomy he is in substantial agreement with the majority of recent writers. He is emphatic in condemning indiscriminate removal, and would await the infection of tonsillar glands or the occurrence of repeated sore-throat. In children who already show signs of rheumatism the results which he observed did not inspire optimism. He concludes that the only hope of success lies in early operation, but even this did not always avert cardiac disease in the cases which he observed.

INDUSTRIAL CONDITIONS OF THE DEAF AND DUMB.

AT the request of the British Deaf and Dumb Association the National Institute for the Deaf has inquired into the industrial conditions of the deaf and dumb and has issued a report.[1] It is estimated that there are some 40,000 persons in the United Kingdom who were either born deaf or became so sufficiently early in life to prevent the natural development of speech. This is about 1 per 1000 of the population, a number surprisingly big for an estimate which does not include those who become more or less completely deaf in youth or adult life—that is, the "deafened" and the "hard of hearing." Of this large total it is doubtful if even half are known to the 50 special welfare organisations which exist in this country for the care of the deaf, and in many large districts no provision of any kind exists for the welfare of these unfortunates. It will be recalled that the education of deaf and dumb children came under the care of the Board of Education in 1894, and their educational status was greatly advanced when the Education Act of 1921 made it obligatory on education authorities to provide for the special education of every deaf child. Yet according to the Board's statistics, only 4151 deaf children attended special schools in England during 1927. The Institute regards the special school as of first necessity since the instruction there provided creates a distinctive medium of impression and expression in lieu of the naturally acquired and ready speech of normal children. This process is necessarily slow, and although children do not leave until they are 16 they are still seriously behind the normal standard in acquired knowledge and the ability to express it. Even with the power of lip-reading and artificially acquired speech the deaf child is never on the same plane in ready understanding and the use of language as the child who hears, although investigations have shown that on the whole deaf children are no less intelligent even if more sensitive and retiring than their fellows. From the economic standpoint it is clear that the deaf are potentially the most remunerative of all the physically defective classes, provided they are given a fair chance. But being compelled by their infirmity to remain in special schools until 16 years of age, they have less chances of competing with adolescents who have already gained two years' experience in their several crafts. Both the health and unemployment insurance schemes demand payment for employees at 16 years of age, thus further weighting the scales against the deaf. The various liability and compensation Acts are sometimes cited by employers as reasons for refusing to engage deaf workers in view of a prevalent (but unverified) fear that the deaf are more liable to accidents than those who can hear. Apart, however, from trades involving dangerous machinery, experience suggests that the deaf employee with his quickness of eye and sensitiveness to danger is as immune from accidents as one with normal hearing. The present position is that in those areas from which statistics could be obtained some 40 per cent. of the male and 47 per cent. of the female deaf are only casually employed, if at all. In other localities the position is no doubt worse. It is computed by the Institute that 20 per cent. of the deaf are of high and 60 per cent. of average intelligence; with suitable training and help in finding jobs all of these should be capable of skilled employment. Between 15 and 18 per cent. will only be fit for unskilled jobs, and the small remainder with definite mental defect will be unemployable. Since the difficulties are partly a question of legislation and partly of employment in special trades and crafts, it would require an official inquiry for their solution. Prevention is outside the scope of the Institute's report, but it is now generally agreed that many acquired types of deafness can be obviated, in part or in whole, by early detection and attention. It is on the earliest years of life that the light of preventive and therapeutic measures should be focused.

[1] Report of an Inquiry by the National Institute for the Deaf, 2, Bloomsbury-street, London, W.C. 6*d*.

ARRESTED RESPIRATION IN INFANTS.

SOME years ago Dr. G. F. Still described in our columns [1] five cases of what he termed attacks of arrested respiration in the newly-born and suggested that these attacks were probably due to some affection of the respiratory centre. A. Peiper [2] has lately given a full and interesting account of this curious condition, linking up his observations with work on the situation and nature of the respiratory centre in man. At the beginning of his paper he quotes experiments on the respiratory centre in animals, especially those of T. Lumsden in cats. This worker described four centres situated in the pons and medulla. In the upper part of the pons there is a "pneumotaxic centre" which exerts periodic inhibition on the next lowest centre termed the "apneustic centre." This centre, if cut off from all influences coming from above, causes prolonged inspiratory tonus or holding of breath. Experimental lesions at a lower level, approximately in the middle of the medulla, cut off the influence of the apneustic centre and the experimental animal can now only inspire by gasps, though expiration is still properly performed. Lesions just below this level cut off the power of expiration and leave only gasping, so that the lowest centre is known as the gasping centre. These results have some importance if they can be confirmed in the human subject, and it is only by observing respiratory disorders and their pathological basis that this may be done. Having this end in view Peiper has studied several examples of respiratory failure in infants, recording the respiratory movements upon smoked drums. The attacks of sudden cessation of breathing which he has investigated occur during the first few days of life and especially in infants premature and under weight. The first attack may be sudden and without warning, and very often comes on during feeding. Breathing suddenly stops, the colour becomes blue, the heart sounds are distant, the muscles relax, reflexes are abolished, and the child lies in a narcotic state. Death may supervene in the first attack, but more usually, just as death seems imminent, the mouth is opened, there is a gasp, and respiration is re-established; the normal colour and action of the heart quickly return and reflexes can be obtained again. These attacks may be repeated and not infrequently the child succumbs in one of them. (In Still's series there were four deaths in five cases.) Peiper thinks that the lesion is in the respiratory centres, though the exact pathology remains obscure. Treatment, he says, must aim at stimulating these centres and keeping the heart going during the attacks. The child should be watched literally day and night, so that artificial respiration can be started

[1] THE LANCET, 1923, i., 431.
[2] Jahrb. f. Kinderheilk., March, 1929, p. 129.

the moment an attack begins. Pure oxygen is a less valuable stimulant than oxygen to which 5 per cent. carbon dioxide has been added for its effect on the centres. Lobeline is said to be useful, and an intramuscular injection of 0·003 g. as a single dose is advocated. Adrenalin may be injected direct into the heart as a last resort if the child seems to be on the verge of death.

Such studies as these may help to elucidate some of the physiological and pathological aspects of respiration. Besides throwing light on arrested respiration in infants they have a bearing on the so-called asphyxia neonatorum.

CLOSED PNEUMOLYSIS.

IN many cases of pulmonary tuberculosis, including most of those occurring in early adult life, artificial pneumothorax is the only method of treatment that offers any prospect of cure. The success of such treatment depends chiefly upon obtaining effective collapse of the diseased lung. If the collapse is incomplete ultimate spread of infection to the opposite lung is almost inevitable. In a recent article Dr. R. C. Matson [1] says that the success of artificial pneumothorax treatment is "almost in direct proportion to the number and character of adhesions present" and attributes 40 per cent. of its failures to this cause. The attempt to stretch adhesions by increasing the intrathoracic pressure is seldom satisfactory, and is not without danger. Grave risks are also incurred when open operation is performed. Less danger and a greater measure of success have attended the cauterisation of adhesions by the method of closed pneumolysis devised by Jacobaeus, whose thoracoscope permits a clear view of the offending bands and thus enables their severence to be effected with the galvano-cautery. Risk of hæmorrhage and of the liberation of tuberculous infection is stated to be lessened if an endotherm is used instead of the cautery. Before deciding to operate Matson rightly insists that there should be reasonable assurance that the patient will recover if a satisfactory collapse is established. The rules which guide the physician in deciding to induce a pneumothorax will obviously determine his decision whether to persist in his efforts to establish a complete collapse. Matson gives three chief indications for cauterisation: (1) incomplete collapse due to adhesions; (2) satisfactory collapse maintained only by high intrapleural pressures which involve discomfort to the patient and risk of rupture of the lung; (3) when in a previously satisfactory pneumothorax the organisation of bands, or adhesions, is causing expansion of the collapsed lung. The benefit that may be expected from intrapleural pneumolysis in the hands of an expert is shown by Matson's own records, for he was able to convert a partial into a complete pulmonary collapse with the abolishment of cough and expectoration in 63 cases out of a series of 100. It is perhaps needless to add that this method of treatment should only be employed by those whose experience of collapse therapy is extensive, and who by constant practice have mastered the necessary technique. The correct use of the thoracoscope and the manipulation of the endotherm or cautery demand the highest degree of skill.

ANTITOXIC SERUM IN SCARLET FEVER.

THERE is no longer any doubt that certain strains of streptococci produce a true toxin, in addition to a destructive substance, "hæmolysin," which does not seem to fall into that category. Such streptococci are chiefly associated with scarlet fever; and two strains, known to bacteriologists as "Dick" and "Dochez," are recognised as being true toxin-forming strains. The toxin produced by streptococci is not comparable with that of diphtheria, save in that an antitoxin is procurable, for it is not the chief weapon of the organism. It is of slight virulence to laboratory animals, though when concentrated, as by the methods of Percival Hartley and R. J. V. Pulvertaft, it is lethal to rabbits. Where, as apparently in scarlet fever, the toxic action of the organism predominates in the clinical picture, the use of antitoxin is followed by excellent results. But the invasive action of the organism is not dependent on the toxin-production.

Many problems remain. In the first place, are all streptococcal toxins, even in scarlet fever, the same? The famous Park strain of diphtheria bacillus is known to be the best toxin-producer, and to yield a high antitoxin of general utility. There is doubt whether a similar strain can be found among streptococci. Wadsworth, Kirkbride, and Hendry [1] bring forward evidence to show that, in fact, the best antitoxins are provided by the Dochez strain—which is fortunate for dwellers in England, where this strain is used to make antitoxin. They further throw doubts on the keeping qualities of the antiserum, which needs careful control. The most urgent necessity, however, is for an adequate method of standardising antitoxin. The accepted one, in America, is the neutralisation of skin test doses in susceptible men. M. B. Kirkbride and M. W. Wheeler have substituted a similar test on goats. In this country the protection of rabbits against death, within a specified time, from intravenous injection of living organisms has been used, with excellent results, by C. C. Okell and H. J. Parish. More recently Hartley and Pulvertaft have suggested the use of concentrated toxin on rabbits; Hartley's method is highly commended in the latest annual report of the Medical Research Council. Wadsworth finds by the skin test method a great variation in the value of antitoxin. Some have as many as 600 units per c.cm.; others are utterly useless, having no demonstrable antitoxin. So long as human beings are necessary for the purpose of standardisation, the antitoxin is of necessity limited in amount, expensive, and, it must be said, unreliable.

There is sufficient proof of the efficacy of this antitoxin, when really standardised, to make it urgent that the problem should be further examined. The introduction of animal tests may put this work on a new footing.

[1] Amer. Rev. Tuberc., March, 1929, p. 233.

THE GASTRIC DIGESTION OF MEAT.

SOME important observations on digestion have lately been made by M. E. Rehfuss and G. H. Marcil,[2] who have compared the results obtained by a fractional test-meal of the usual carbohydrate type and one composed of 60 g. of scraped meat, the two meals being given within 48 hours of each other. After the meat meal they found that the acid response in the normal was 30 per cent. higher and two types of response were noticed, one prompt and decided and the other slow and indifferent. Meat is a true intragastric stimulant and in health is capable of producing the maximal response from the gastric mucosa. The response in disease is no less interesting. Though, as they point out, only a limited number of cases have been investigated, too few to allow of complete generalisation, three groups may be separated. While in purely functional cases and in those with peptic ulcer the meat produces the extra acid response, there was no response to either carbohydrate or meat meal in pernicious anæmia, gastric carcinoma, delayed resolution in lobar pneumonia, and chronic cholecystitis. The intermediate stage, in which the meat response is present but is less than normal, is furnished by such cases as cardiac or renal disease, blood dyscrasias, and "other conditions commonly encountered in medical ward service." In these cases the power of the stomach to deal with meat is merely lowered and not lost. It is suggested that these variations in the response to a meat and carbohydrate meal may be regarded as a measure of

[1] Amer. Jour. Hyg., March, 1929, p. 371.
[2] Jour. Amer. Med. Assoc., March 9th, 1929, p. 763.

mucosal efficiency and that persons who give a similar response to bread and meat, as shown by the fractional test-meal, cannot be regarded as normal.

This work is illuminating and suggests several possibilities. It throws light on those puzzling cases where acidity and acid regurgitation are complained of by patients who on investigation, with a carbohydrate meal, show a subacidity amounting even to achylia. The interpretation of the fractional test-meal is beset with pitfalls. It is usually carried out under conditions anything but pleasant or normal to the patient, who is as a rule nervous; the meal itself is unappetising and often distasteful; it is digested in the prone position or partially reclining, with a foreign body in the stomach causing a certain amount of discomfort and usually producing excessive secretion of mucus. There is often a tendency to place too great faith in results obtained under these abnormal conditions, for while it is true that most of these drawbacks may disappear with several examinations, very few patients will consent to become proficient in this method of investigation in the interests of scientific accuracy. The same objection—namely, examination under abnormal conditions—may be urged against other methods daily employed, but this does not answer the objection; it merely sounds a note of caution against accepting results too literally. To this inherent limitation of the fractional test-meal Rehfuss and Marcil have added another in showing how great is the variation of response to different food stimuli. Their work must make the medical man look again at some of the diets he orders. Are we not often too nervous of ordering good red meat for our patients, and giving in its place some patent or partially digested sloppy pabulum which we cheerfully call a "light diet"? Often it is anything but light to the patient. Would it not sometimes be better to clean the gastric lining membrane, make sure the teeth are adequate and efficient, and then try the effect of, say, a nicely cooked chop, carefully masticated, with a couple of slices of dry bread? In tropical climates raw meat juice is of great value where milk is badly borne by an infant with summer diarrhœa and vomiting. The complete change seems to put the child's stomach on its mettle and it usually responds to the challenge.

Apart from its valuable suggestion of a new test for the efficiency of the gastric mucosa, this paper seems to show that we have not sufficient faith in the adaptability of our stomachs.

ANTIVENEREAL MEASURES IN THE STRAITS SETTLEMENTS AND MALAYA.

MORE than forty years have passed since, after an agitation conducted with relentless fervour by Josephine Butler and her friends, the Contagious Diseases Acts, 1864–69, in this country were repealed. An echo of the controversy surrounding this reversal of policy is to be heard in the arguments set out by a committee[1] appointed by the Secretary of State for the Colonies to examine a Straits Settlements Ordinance (No. 15 of 1927) and a Federated Malay States Enactment (No. 18 of 1927). These provisions are substantially similar, their object being to diminish the spread of venereal disease. The sections to which the attention of the committee has been drawn are those permitting the compulsory medical examination of any individual prostitute when there is reason to suspect her of suffering from venereal disease. After careful consideration of the local situation, as well as the general problem, they advise that these sections of the ordinance and enactment shall be held strictly in reserve, and eventually, when alternative legislation can be passed rendering illegal the keeping of brothels, shall be repealed. This does not imply that the committee do not view with sympathy the dilemma which has led to the attempt to strengthen the hands of the local authorities in enforcing the existing law, but that they hold, in agreement with expert opinion in most countries, that the use of compulsion in any form is likely to destroy the atmosphere of encouragement to make the fullest use of the provisions made for free treatment.

The local position is difficult to understand without some reference to the history of the legislation now in force. When, in 1886, Mrs. Butler and her co-workers had convinced Parliament that the subjection of prostitutes to periodical medical examination was a gross interference with the liberty of the subject, besides being useless as an antivenereal measure, the wave of feeling rose so high as to overflow to the Colonies, as far as legislation was concerned, before public opinion there was educated to the need for a change. In the Straits Settlements the system of compulsory medical examination of prostitutes was thus abruptly brought to an end in 1888, and in 1894 the registration of brothels was discontinued there, and also in the Federated Malay States. Unfortunately the local authorities, though they had to obey directions from the Home Government, were not convinced that the innovation would not lead to an increased incidence in venereal disease, as well as to further exploitation of prostitutes, who are, for the most part, non-Europeans of a low type. Fruitless efforts have more than once been made to induce the Home Government to consent to a reintroduction of registration and periodical medical examination, on the grounds that the incidence of venereal disease was increasing. In 1898 the representations were effective to the extent of securing an amendment to the law in both colonies whereby brothel-keepers were made subject to fine or imprisonment if a prostitute in their houses carries on her trade while suffering from any contagious disease. Unfortunately for the success of this scheme, which has now remained in force for some thirty years, some of the brothel-keepers fined for the offence are known to have recovered the money from the prostitutes concerned. The obvious countermove of imposing terms of imprisonment without the option of a fine proved ineffective, since the keepers realised that proceedings could only be based on medical evidence, which in turn could not be obtained without the consent of the woman; if they could persuade her to refuse examination they were safe from prosecution.

This, briefly, was the situation which, in 1927, led to the framing of new provisions which would prevent such evasion of the law. The committee have evidently given the complex situation the most careful thought, have examined many witnesses, and have come to the considered conclusion that, whatever its purpose, the punishment of a prostitute for not complying with a requirement which is not applied to the community generally is not justifiable, and that even the provision penalising brothel-keepers, which was framed at a time when the present system of treatment of venereal disease had not been developed, is now obsolete. They advocate in its place the extension of the powers of closing brothels already possessed by the authorities, in order to prevent a keeper of a closed brothel from starting another. When the policy of suppressing known brothels, which should be actively pursued, has resulted in their decline, legislation rendering illegal the keeping of a brothel should replace the existing provisions. Meanwhile free facilities for the treatment of venereal disease in men and women should be extended, and to this end financial provision should be made for the employment of highly qualified medical men and women at all clinics and dispensaries, and for a development of the health visitor service. The report deserves study by all concerned with the control of venereal disease. It epitomises knowledge painfully gained in the struggle to combat venereal disease throughout the world.

[1] The committee consisted of Lord Balfour of Burleigh (chairman), the Hon. Mrs. Alfred Lyttelton, Dr. F. Barrie Lambert, Mrs. Neville Rolfe, Sir O. E. Warburg, and the Rev. W. C. Roberts, with Mr. G. L. M. Clauson as secretary.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXCII.—THE TREATMENT OF LOW BLOOD PRESSURE.

HYPOTENSION may be said to exist when the systolic blood pressure falls below 110 mm. mercury. A low blood pressure is a symptom of many diverse affections. It does not constitute a whole clinical picture as may be the case with hypertension. In most instances it does not even form the dominant feature of the case, though there are notable exceptions to this. The treatment of low blood pressure, therefore, may merely be incidental to that of the underlying condition, but occasionally it is justifiable and even advisable to direct treatment principally to this one symptom.

Patients with low blood pressure may conveniently be divided into three groups: (1) those requiring no treatment; (2) those in whom treatment is usually unavailing; (3) those in whom it is requisite and usually attended with some success.

Patients requiring no treatment.—Many healthy people have a persistently low blood pressure without untoward symptoms; athletes may, indeed, be found amongst this group. No treatment is required, and if instituted would probably do harm. In patients over fifty, moreover, low pressures are often prophetic of longevity and these patients are regarded as good insurance risks.

Cases where treatment is unavailing.—In this category is included "status lymphaticus," where the heart and great blood-vessels are smaller than normal and the arterial pressures correspondingly low. It is evident that little or nothing can be done for such patients except to advise such prophylactic measures as prevent any undue strain on the cardiovascular system. The condition styled by Martinet "hypo-sphyxie," characterised by general malnutrition, blue extremities, and cardiovascular hypoplasia, does not yield very well to treatment, though general tonic measures—good food, well regulated exercises, and massage—may do something to improve the patient's condition. This applies also to the treatment of those types of neurasthenia which are accompanied by hypotension.

Cases requiring treatment.—These cases fall naturally into two classes, those in which treatment is urgent, such as hæmorrhage and shock, and those in which the hypotension is merely one of several symptoms requiring attention. These may be considered in more detail.

Hæmorrhage and Shock.

The low blood pressure of shock or hæmorrhage is largely due to diminution of circulating fluid, either through capillary stasis or through direct loss of blood. In both cases the amount of blood returning to the heart is notably decreased. The treatment, therefore, consists in replacing this fluid by giving ample liquids by mouth, by use of rectal salines, or best of all by the injection of subcutaneous salines. Several pints of fluid may be absorbed from the loose tissue of the mammary or axillary regions in the course of a few hours.

If the blood pressure falls to 60 mm. death usually occurs and if the readings approach this value, therefore, the more rapid effects obtainable by intravenous administration of fluids are necessary. Salines are of value given in this way, but since shock is partly due to loss of colloids, especially hæmoglobin, solutions of gum acacia may be substituted with advantage. Theoretically the appropriate method of replacing the lost fluid is by blood transfusion, particularly in cases of severe hæmorrhage, where it may be repeated, though in many instances salines or gum acacia seem to be equally beneficial. Serum to a pint of which ℥vii., to ℥viii. of 1/1000 adrenalin have been added is also of value, given intravenously, and is recommended by French authors.

The insufficient cerebral circulation consequent on the fall of blood pressure must be treated by posture; the pelvis should be raised, the head lowered, and the limbs bandaged. The usual precautions in shock regarding warmth and quiet also play an indirect part in restoring the blood pressure to normal.

Anaphylaxis.—In addition to the usual nursing principles applicable to all forms of shock, adrenalin seems to be of considerable value in combating the hypotension in anaphylaxis. It should be given subcutaneously in doses of ℥v. to ℥x. of liq. adrenalin hydrochlor., and as its action is evanescent it may be repeated.

A fall of blood pressure may also occur in *anæsthesia* accompanied by symptoms resembling those of traumatic shock. These symptoms can usually be avoided by careful precautionary measures, the routine examination and careful selection of all patients for anæsthesia, avoidance of undue exposure, maintenance of warmth, and choice of a suitable anæsthetic. Chloroform is more likely to produce a fall of blood pressure than other anæsthetics.

The use of *spinal anæsthesia* is contra-indicated in patients with low blood pressure, but where the pressure falls after its use—a not uncommon event—the patient should be kept in bed with the head downwards during and for two days after the operation. In urgent cases intravenous administration of adrenalin, or in less severe cases, intramuscular pituitrin are of great help. Ephedrine and ephetonin also have their advocates.

When, before operation, the blood pressure is very low, due to shock or hæmorrhage, every effort should be made to restore it to normal figures before commencing any surgical procedures. For this purpose blood transfusion or intravenous salines are most helpful.

Conditions of which hypotension is a less urgent, but still important feature, include certain forms of cardiac disease, acute and chronic infections, and various endocrine disorders. In these it has already been emphasised that the fall of blood pressure is only one symptom in the clinical picture and the treatment must, therefore, be that of the whole syndrome. Occasionally, however, in some of the conditions to be mentioned the hypotension is so marked as to form the most important feature of the case and require special attention.

Hypotension in Cardiac Disease.

Low pressures are not common in cardiac disease, whether valvular or myocardial, except in the terminal stages. A sudden fall of pressure in a patient with *hypertension* usually portends serious heart failure, and the patient should have absolute rest in bed with a light diet at first, and suitable warmth. Digitalis is of value if there are signs of back pressure such as œdema and engorged veins, but will otherwise have little effect. Pituitrin in doses of 0·5 c.cm. twice daily may be given intramuscularly with good effect in some cases, but it must be used with care. Similar treatment is suitable in the terminal hypotension of myocarditis.

In *chronic valvular disease* with decompensation the blood pressure is frequently a little above normal, and with improvement in the patient's condition tends to fall. It is thus inadvisable to attempt to reduce the pressure. If, however, hypotension exists from the beginning together with signs of passive congestion, digitalis and rest in bed may be effective in restoring normal pressure.

With *auricular fibrillation*, although the estimation of blood pressure is difficult owing to the variability in the size of the ventricular beats, the average readings may afford a rough guide as to the variations present. In cases with low pressure, if the ventricular rate is rapid, return to normal figures may be obtained by correct administration of digitalis. This should be

given either in the form of the tincture in doses of ℥xx. t.d.s. or as Nativelle's digitaline gr. 1/240 t.d.s.

Bradycardia is often accompanied by hypotension and this is especially marked in cases of Stokes-Adams seizures. For the latter condition adrenalin in doses of ℥v. to ℥x. subcutaneously is of great value; possibly part of its beneficial action is due to its effect in raising the blood pressure.

Hypotension in Acute Infections.

Hypotension is a frequent symptom of pneumonia, typhoid fever, influenza, diphtheria, cholera, and other infections. Its treatment will vary accordingly, but as the low blood pressure is mostly due to a combination of two factors these will require special attention. The two factors are myocardial weakness and vaso-motor paresis; treatment varies according as to which factor predominates. In treating myocardial weakness it is essential that the heart shall have ample time in which to recover from the toxic changes which have occurred. For this purpose a prolonged rest in bed is necessary, preferably with the head low; all active movements on the part of the patient should be strictly limited. This is particularly important in cases of pneumonia and diphtheria. When myocardial involvement is suspected in these cases, the period of rest should be extended to from six weeks to two months after the cessation of pyrexia. It is doubtful if drugs have any beneficial action on the myocardium in most of these cases, but digitalis may be useful. In those acute infections where the condition resembles that of shock, cases with sudden pallor, cyanosis, and collapse, pituitrin may be of considerable help.

The second factor, loss of vaso-motor tone, probably plays a larger part than the myocardial factor and especially accounts for the persistence of hypotension after subsidence of the fever. It can probably be treated best by carefully graduated exercises, for example, the Schott exercises practised at Nauheim, or by well-regulated Swedish drills. Massage forms a very useful adjunct. Amongst drugs, strychnine holds an important place for its stimulant action on the vaso-motor centres. It may be given by mouth in doses of 4 minims of the liq. strychnin. hydrochlor., or on more urgent occasions as hypodermic injections of gr. 1/32 three times a day. Indiscriminate ductless gland therapy is to be deprecated, but careful use of adrenalin, given hypodermically in small doses (℥iii. to ℥v), is of value, or whole gland suprarenal (gr. v.) may be given by mouth. Ephedrine hydrochloride gr. ss. twice or three times a day may also be employed, but it is still on trial.

The diet in cases of low blood pressure should be full and nutritious with an abundance of milk, eggs, and cream. Meat should be allowed in reasonable quantity, but it does not seem advisable to overburden a convalescent patient with large amounts purely on the grounds that it is usually restricted in cases of high blood pressure. Similarly, the use of articles rich in extractives, such as liver, kidney, sweetbreads, or meat extracts, although contraindicated in hypertension, are not on that account to be advocated for hypotension. Alcohol should in general be avoided in view of the fluctuations in blood pressure which it produces, but when hardship is entailed by its complete withdrawal small amounts of whisky may be allowed.

Cholera requires different treatment from the other infections, since the low pressure is due directly to loss of body fluids. Similar hypotension may occur in any severe diarrhœa. The fluid must be replaced by oral, subcutaneous, or intravenous administration of salines according to the urgency of the case.

Hypotension in Chronic Infections.

Low blood pressure occurs very consistently in pulmonary tuberculosis and careful search must be made for signs of this disease in cases with persistently low pressure without obvious cause. Treatment will be that of the lung condition; the hypotension rarely needs special attention.

Another possible cause of persistent hypotension is some focus of infection such as may occur in chronic appendicitis, cholecystitis, in root abscesses of the teeth, low grade infections of the genito-urinary tract, and so forth. Treatment consists in the discovery and eradication of the infected area. This may involve surgical intervention or the use of vaccines.

Hypotension in Endocrine Disorders.

The most definite of these is *Addison's disease*. The treatment of this condition is not very satisfactory, but a combination of whole gland suprarenal given by mouth together with carefully spaced subcutaneous doses of adrenalin may do something to raise the blood pressure and relieve the patient's symptoms.

Some types of *pituitary insufficiency* are associated with low blood pressure, and the rational treatment for these cases is the administration of pituitrin 0·5 c.cm. twice daily, intramuscularly, together with whole gland pituitary by mouth.

One further condition may be mentioned under this heading, for although little is known about its ætiology, certain facts suggest its association with a ductless gland dyscrasis—namely *postural hypotension*. In this complaint the hypotension occurs on changing from the recumbent to the erect posture. Some cases are associated with visceroptosis and for these a good abdominal belt with masasge and exercises are of value. Strychnine is also useful. Recently ephedrine has been praised in this connexion and may be tried in doses of gr. ½ every three hours for several days.

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The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. R. E. Rampling to be Surg. Comdr.
H. L. Belcher to be Surg. Lt.
Lt.-Comdr. (Retd.) C. H. Petrie to be Comdr. (Retd.).
Surg. Lt. H. L. Duncan is appointed to the *Virid.*

ROYAL NAVAL VOLUNTEER RESERVE.

Proby, Surg. Lt. T. C. Larkworthy to be Surg. Lt.
Surg. Lt.-Comdr. C. C. Elliott is appointed to the *Repulse.*

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. P. Davidson, having attained the age for compulsory retirement, is placed on retd. pay.
Maj. R. P. Lewis to be Lt.-Col., vice Lt.-Col. P. Davidson.
Maj. J. D. Kidd retires, receiving a gratuity, and is granted the rank of Lt.-Col.
Lt. L. R. H. Keatinge is secd. for duty with the Sudan Def. Force.

TERRITORIAL ARMY.

Maj. T. H. Richmond, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.
Capt. J. O. Thomas to be Maj.
Maj. R. C. Aitchison (Capt. Res. of Off.) resigns his commn. in the T.A.
Lt. D. R. McGregor resigns his commn.

INDIAN MEDICAL SERVICE.

Maj. Mozaffer Din Ahmed Kureishi to be Lt.-Col.
Temp. Capt. Daulat Manghirmal Lala, the relinquishment of whose temp. commn. has been notified, is permitted to retain the rank of Capt.

HOSPITAL ACCOMMODATION AT LIVERPOOL.—At the annual meeting of the Royal Southern Hospital, Liverpool, Mr. Allan Paton, the President, suggested that the voluntary hospitals of the city should be superseded by one large hospital with ample accommodation for all patients, including private patients of the middle and upper classes. Such an institution should be within easy reach of the University and served by small casualty stations and ambulances in appropriate parts of the city.

Special Articles.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.

THE PARIS CONGRESS.

THE second quinquennial congress of this Association, which was founded in 1919, was held in Paris from April 10th to 16th, the meeting-place being appropriately the Institut International de Coopération Intellectuelle (Palais-Royal), lent by the League of Nations. Nearly 300 medical women were present, including representatives from America, Austria, Belgium, Bolivia, Canada, Denmark, France, Germany, Great Britain, Hungary, India, Italy, Japan, Norway, Poland, Spain, Sweden, Switzerland, and Yugoslavia. The business done included the transfer of the office of the Association from London, which has been the headquarters for the past five years, to Paris, since for the next quinquennial period the officers have been elected from among the French medical women. Lady Barrett, Dr. Jane Walker, and Miss Louisa Martindale retired from the offices respectively of president, treasurer, and honorary secretary, and are succeeded by Dr. Thuillier-Landry, Dr. Réguin, and Dr. Montreuil-Straus. The newly elected vice-presidents are Lady Barrett (Great Britain), Dr. Tayler-Jones (United States), Dr. Mathilde Salzmann (Germany), Dr. Carcupino Ferrari (Italy), Dr. Dagny Bang (Norway), and Dr. Nechkovitch-Voutchetitch (Yugoslavia). Apart from the general business and the council meetings, considerable effort had been made to provide interesting matter for discussion at the sessions devoted to the consideration of two problems of especial import to medical women. The first of these concerned

Sex Instruction for Children and Adolescents.

Two members had been chosen to circularise selected medical women in the various countries and to summarise their replies to a questionaire in a form which would readily show what, if any, methods of sex education were being pursued in different lands and would moreover bring to light any new suggestions as to procedure or organisation of instruction. In view of the excellent surveys prepared from information received by Miss L. Martindale and Dr. Montreuil-Straus, the actual discussion, which took place on April 11th, was rather disappointing. Matters of general agreement were that a child's earliest questions as to the transmission of life should be answered without evasion, since in this way he acquired some knowledge before it had any emotional significance for him. Most contributors regarded the mother as the most suitable person to give teaching to very young children, and stressed the importance of providing her with opportunities to equip herself to do so. At present parents often fail to give this teaching, the poorer classes having no vocabulary and the better educated being reluctant to embark on the subject. The doubt was raised whether even the present-day parent is likely to be able to answer questions without affective tone, but the majority of contributors believed that she could be taught to do so. As to older children, the impression given was that a definite programme of sex instruction in schools would not be welcomed by the majority of parents in Norway, England, Hungary, and Spain, whereas parents in Sweden, Germany, and Switzerland are complacent if not eager for such instruction. In France opposition to any innovation comes from those parents who have no experience of modern methods of instruction. In this connexion it is interesting to note the attitudes taken in official circles in different countries. For example, in Norway the State does not encourage the authorities controlling the universities, training colleges, or schools to provide sex instruction in any form. On the contrary, those who have attempted such teaching have met with some resistance, and permission to use a text-book—described as "very good"—of health instruction containing a brief introduction to sex hygiene has been withheld. Of the other countries, the attitude in Germany forms the greatest contrast. Thousands of private as well as public lectures are given annually. Among the sections of the community who organise lectures are party political associations, associations of housewives, the trades-unions, associations of landlords, and religious organisations. Elementary and secondary school teachers attend compulsory courses in sex hygiene and in the recognition and guidance of psychological manifestations of sex instincts in adolescents. Chairs for sexual pedagogics are established at three German universities.

Part of a group taken at the Clinique Baudelocque (Maternité). Prof. Couvelaire in centre.

Some pertinent suggestions were made at the congress by various delegates. It was generally held that sex instruction to the young should form

part of courses of biology, anatomy, and physiology or hygiene and should not be given a special prominence. The deliberate omission of the reproductive system from consideration in any classes where structure, functions or hygiene of the other systems of the body are being explained is still the custom in some text-books and classes and is to be condemned. Several contributors stressed the mistake of giving different information to boys and girls, on the grounds that a single standard of knowledge is conducive to a single standard of morality.

The other subject discussed was

Analgesia in Midwifery.

Reports on this subject were collected by Dr. Doris Kunckel (Germany) and by Dr. Nechkovitch-Voutchetitch. All the contributors were agreed that there exists at present no ideal method of inducing analgesia in midwifery. Those which produce complete analgesia are not free from danger either to mother or child, or from unfavourable effects on uterine contractions. On the other hand, nearly all those replying to the questionaire agreed that even if the pain of labour is physiological and not pathological—a point on which there is no unanimity—every effort should be made to find harmless means to relieve it. The main drawback of inhalation anæsthesia is that it can only be applied in the second stage of labour, and even then, in its most usual form, chloroform and ether, only for a comparatively short spell. Opinions as to the advantages and disadvantages of chloroform and ether revealed no surprises, but considerable variation in practice. In France chloroform is popular and also a mixture of ether (60 parts), chloroform (20 parts), and ethyl chloride (10 parts). Nitrous oxide combined with oxygen was praised by speakers from America, England, and Germany, since it is free from danger, rapid in action, quickly eliminated when administration ceases, has no toxic effects, and does not diminish uterine contractions. It can be used safely in cases of cardiac, pulmonary, and renal disease. It has, however, the serious drawback of requiring a large and cumbersome apparatus and a specially trained person for its administration, and is therefore only suitable for use in a hospital. Moreover, it has sometimes to be supplemented by ether or chloroform.

Lumbar and sacral anæsthesia were not recommended for normal labour. Paracervical anæsthesia —the injection of novocain-adrenalin solution into the tissues and into the os uteri, combined with injections into the pudic nerve and large doses of pituitary extract—is said by some to lead to such a degree of relaxation of the cervix and perineum that the child's head meets with no resistance. It is contra-indicated in cases complicated by fever, gonorrhœa, and pelvic inflammation. The method appears to be worth further investigation.

As to twilight sleep, notwithstanding the considerable amount of success achieved by this method, it has important drawbacks and is not likely to be universally adopted. Pernocton and avertin were regarded as still in the experimental stage.

The administration of an analgesic in the second stage in normal cases was advocated by most of the American, British, German, and Scandinavian contributors for humane reasons. The danger of diminishing the force of the pains, of thus prolonging labour, and increasing the proportion of cases requiring interference was not overlooked; but, on the other hand, pain itself may be the cause of delay, or its intensity may determine the decision to hasten delivery by forceps when this is not inevitable. Representatives of French, Italian, Polish, and Yugoslavian medicine reflected a definite tendency in these countries to deprecate the administration of anæsthetics in normal cases, on the grounds that none yet available is completely innocuous to mother and child.

Visits to Institutions.

During the congress visits were paid to various hospitals and institutions. Prof. Couvelaire escorted a large party round the Clinique Baudelocque, a maternity hospital where accommodation for antenatal work and infant welfare as well as for the actual conduct of labour is spacious and the equipment admirable. Specially attractive features are the glass cubicles in the waiting-rooms to avoid infection of one patient by another, and the fact that while mothers and babies may spend the first days of the puerperium together in cheerful wards, there is no general labour ward, each patient being delivered in the privacy of a single room. The department for septic cases is housed in a separate block and cases of venereal disease are also treated, before or after confinement, in a well-warmed and lighted department where their convenience as to times of attendance is studied. The Clinique Baudelocque is only one of many "maternités" serving different areas in Paris, but it is one of the most modern in design and enlightened in administration. As regards tuberculosis, this clinic works in collaboration with the Hôpital Laënnec which was shown to some of the members of the congress by Dr. Jules Marie in the absence of Prof. Léon Bernard. Here mothers in whom tuberculosis has been detected at the clinic or elsewhere are brought with their infants, whether or not the latter have a positive Pirquet reaction. The infants are installed in a ward on the ground floor and are kept as much as possible in the garden; the mothers, warded on the first floor, are said to derive some comfort from watching them from the balcony. After six weeks, during which the Pirquet reaction is carefully watched, temporary cottage homes are found for those children who remain healthy, since experience shows that if they show no signs of infection at this stage they are likely to remain well. Recently a ward has been allocated to tuberculous fathers of young infants, the children also being admitted for observation.

On the surgical side a visit was paid to the Salpêtrière, where Prof. A. Gosset described the surgical clinic of 250 beds under his control. His department consists of a clinic of the Faculty of Medicine, of an anticancer centre, and of the various laboratories and X ray departments necessary to a surgical department. The Salpêtrière is an admirable example of the adaptation of an old hospital to modern requirements and the beautiful buildings and gardens were envied by those who work in towns where hospitals have had to cover nearly all their spacious grounds with buildings.

An opportunity was taken to visit a new clinic for children, opened in February last by Mr. Loucheur, Minister of Labour and Hygiene. This clinic has been organised under the Red Cross by the Association des Dames Françaises and is situated at 146, Avenue de St. Ouen, near the centre of the industrial area of Paris. The clinic is under the direction of Dr. R. Massart, to whom its inception is due, and who is himself responsible for the surgical department Other services include medical, orthopædic, ear, nose, and throat, antenatal, and dental departments, and there are three cots where children can rest after tonsillectomy. An operating theatre, X ray department, and pathological laboratory complete the picture. This miniature hospital is evidently welcomed by the practitioners of the neighbourhood and patients who pay what small sums they can afford are already plentiful. Here, as in some of the larger hospitals, precautions are taken to avoid the spread of infection by glass divisions in the waiting and dressing rooms.

At the Pasteur Institute Dr. Calmette, and at the Institut de Radium de l'Université de Paris Prof. Regaud, received members, while visits were also paid to the Musée de l'Hôpital Saint-Louis and the Musée de Guerre du Val-de-Grâce.

Social Activities.

The success of the congress was due to the great enthusiasm of the Association Française des Femmes Médecins in devising a programme and in procuring

for the members so many agreeable social amenities. From the opening session on April 11th, when the rector of the Académie de Paris and the hospitable director of the Institute in which the meetings were held welcomed the members, an international spirit of cordiality prevailed. The president of the Senate received members in the Palais du Luxembourg, the Municipality of Paris at the Hôtel de Ville. Parties were given by various women's organisations and a dinner by the Association Française des Femmes Médecins. The reception given by Mme. Thuillier-Landry on the evening preceding the official opening was an admirable way of breaking the ice. The cordial spirit in which all delegates and members were greeted was appreciated especially by those who came from remote countries. The congress broke up in the assurance that for the next five years the affairs of the Association would be in safe hands and that its prosperity and influence would be still further extended.

CRIME IN ENGLAND AND WALES.

THE STATISTICS FOR 1927.

THE annual criminal statistics for England and Wales do not appear very punctually. Those for the year 1927 (Cmd. 3301, H.M. Stationery Office, 4*s*.) have just been issued by the Home Office. They give the first information of the working of the two important statutes which in 1926 amended the law of coroners and of death registration.

Coroners and Death Registration.

These two Acts have cost the country slightly more. Deaths rose from 54,111 in 1926 to 60,511 in 1927, but expenses rose from £67,123 to £93,666. No one will grumble if this means that, as Parliament intended, the coroner is getting more expert assistance in his task of investigating the cause of death. Full advantage is apparently not yet being taken of the facilities in this direction. The 1926 Act authorised coroners to obtain a post-mortem examination and report by a qualified practitioner and, if thereupon satisfied that no further inquisition was necessary, to dispense with an inquest except where there was cause to suspect violence or unnatural death and except in the case of deaths in prisons and other special circumstances. The Home Office comments on the fact that in one English and four Welsh counties and in 22 English and two Welsh boroughs no advantage was taken in 1927 of this machinery. The actual totals of post-mortem examinations requested or directed by coroners were 12,904 in inquest cases and 3616 in non-inquest cases. Increasing motor traffic presumably accounts for the upward trend in deaths due to accident. In 1927 as many as 15,135 deaths were attributed by coroners' courts to accident or misadventure—nearly 2000 more than in 1924.

The Increase in Suicide.

Suicide is another phenomenon which is increasing out of all proportion to the increase of population. The comparative figures here are startling. In 1856 there were 1314 cases; if the figure of suicides had merely kept pace with the figure of population, the total for 1927 would have been 2711, whereas in fact it was 4863.[1] It would be interesting to know whether the medical profession has been conscious of any such increase and, if so, to what causes it is to be ascribed. No great rise was noticeable before 1914; during the war there was a sharp fall in the rate; but since the last stages of the war there has been a swift leap from under 3000 to over 4500 suicides a year. The attempted suicide, it is noted, is being humanely treated. The first object is to find some relative or friend who will undertake to look after the person who committed the attempt. The Home Office discloses the fact that for many years it has advised police forces not to proceed against the accused where this object is attainable, unless there is some special reason such as the commission of a crime, threats to renew the attempt, previous attempts, habitual intemperance, or indications of insanity. In the last-named circumstances it may be essential that the accused person should, in his own interests, undergo a period of detention under skilled supervision. Here there is another change in the law to be mentioned. Three years ago (as the result of the Criminal Justice Act, 1925) it became possible to dispose of a charge of attempted suicide at petty sessions instead of, as formerly, to go to the expense, delay, and publicity of committing the accused for trial on indictment. The magistrates, therefore, can now impose a sentence of detention, and this course was taken in two-thirds of the proceedings in 1927, while, for the humane reasons already mentioned, no proceedings at all were taken in 1970 out of the 2724 cases of attempted suicide of which the police became aware. The "sex and age" table shows the usual disproportion between the totals of males and females on whom inquests were held. About twice as many inquests are held on males as on females; the figures for 1927 are 21,555 males and 10,872 females; in 1924 the respective figures were 20,849 males and 10,852 females.

Infanticide.

Inquests were held on the bodies of 276 children suffocated whilst in bed with their parents or others; in 22 of these cases an open verdict was returned, in the remainder the verdict was accidental death. There were 485 inquests on the bodies of newly-born children; in 28 cases a verdict of wilful murder was the result, in one case it was manslaughter, and in six cases it was infanticide. The usual introductory note to the criminal statistics by a member of the Home Office establishment draws special attention to the five years' working of the Infanticide Act of 1922. The Act seems undoubtedly to have achieved its purpose of diminishing the charges of murder against women who kill their babies while mentally deranged by recent childbirth. On the other hand, juries who before 1922 were inclined to bring in verdicts of mere concealment of birth instead of murder now seem willing to find verdicts of infanticide rather than concealment of birth. Of seven women convicted of infanticide in 1927, four were bound over without supervision, one was sentenced to 15 months' imprisonment, one to 12 months, and one was sent to an institution for mental defectives. Next year the writer of the introductory note might usefully enlarge upon the offence of criminal abortion. Recent prosecutions and the general practitioner's experience indicate that the official figures could be interestingly elaborated. The quinquennial averages for the present century of persons tried on indictment for procuring abortion have been 11 for 1900–04, 20 for 1905–09, 30 for 1910–14, and 43 for 1915–19. From 1920 to 1926 there were the following remarkable fluctuations: 35, 39, 19, 22, 44, 62, and 41. The 1927 figure was 44; 14 were men, 30 were women; 10 were acquitted, 1 was sent to penal servitude, 27 to imprisonment, and 6 were bound over. The statistics, of course, give no idea of the number of cases of strong suspicion taken up by the police.

[1] In reply to a recent question in the House of Commons the Home Secretary gave the total figure for the year 1928 as 4845 (3381 males and 1464 females).

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—An open meeting will be held in the Hastings Hall, British Medical Association House, on May 3rd, at 8.30 P.M. A report of the Cancer Research Committee of the Marie Curie Hospital on three years' work on the treatment of cancer of the uterus with radium, with demonstrations of technique and cases, will be given by Miss M. Chadburn, Dr. G. Hurdon, and Dr. Helen Chambers. This will be followed by a discussion to be opened by Prof. Louise McIlroy, Miss E. Bolton, and Miss L. Martindale. The meeting is open to all members of the medical profession.

MODERN PHYSICAL TREATMENT IN RELATION TO RHEUMATISM.

By R. FORTESCUE FOX, M.D., F.R.C.P.,
PRESIDENT OF THE LIGUE INTERNATIONALE CONTRE LE RHEUMATISME.

In the present century physical treatment has undergone an unexampled development. Many kinds of energy have been utilised in medicine, one after the other. The long list of physical remedies now includes, in *radiotherapy*, radium and rontgen rays, Finsen's light, luminous and thermal, infra-red and ultra-violet rays, solar radiation and skyshine; in *movement*, exercises, manipulation, and mechanical treatment; in *electrotherapy*, besides the older forms, ionisation, diathermy, and the cautery knife; in *hydrotherapy*, a great extension of methods for applying heat and cold and mechanical energy in baths of water, vapour and hot air, not to mention local hyperæmia by heat or ligature.

So wide a therapeutic field naturally lends itself to irregular and partial exploitation; some one form of treatment, such as electricity, manipulation, or light is vaunted as the sole and sufficient cure. The popularisation of particular methods and the unfounded claims put forward by uninstructed persons gravely hinder the right development of physical treatment. It should be remembered, on the one hand, that this group of remedies, which are commonly called "natural," have always powerfully attracted both simple and educated people. On the other hand, it is equally true that from one cause or another a practical knowledge of their action and uses has not been included in the training given to medical men. Such a discrepancy between public demand and professional supply constitutes at the moment an evil which cannot be ignored. In the meantime the right attitude for the practitioner is well defined by a philosophical French writer:—

"We are in danger of opposing our ideas the one to the other; progress in remedial exercises does not imply falling back in surgery; the use of waters does not oblige us to abandon the pharmacopœia . . . the specialist who tries to embrace too much injures his own speciality . . . the medical man who has only one means of treatment at his disposal is always poor, and sometimes dangerous. . . . That need not hinder us from carrying on our studies in one class of remedies, but it will prevent our giving to these remedies a disproportionate and above all an exclusive importance."[1]

Basal Facts.

The basal facts upon which physical treatment is founded are so familiar that they are almost forgotten. It is forgotten that life is maintained by a constant succession of physical stimuli, and that even the slightest changes in the physical medium are inevitably reflected in physiological changes in the organism. The human body, on account of its highly developed organs of contact, is almost incredibly sensitive to external conditions. Meteorological instruments can scarcely record changes of air of which many invalids are immediately aware.

It is true that young and strong persons can adapt themselves better than most animal and vegetable species to variations of temperature and altitude. But this primitive human power of acclimatisation to all kinds of physical conditions is usually at least in abeyance in civilised communities. It can be recovered in vigorous persons and by special training, but it is very much and permanently circumscribed in the majority of individuals. Intolerance of cold is met with at the two extremes of life, in infancy and in old age, often indeed beginning in middle life, also in certain races, and in susceptible but otherwise sound persons at all ages, in many states of depressed or failing health, after acute illness, and above all in many states of chronic illness, such as the "rheumatic" diseases. Of many chronic disorders it is a very striking characteristic; the physiological reaction to cooling of the body which takes place at once in vigorous subjects is more or less absent. Persons so affected must, like delicate plants, be temporarily or permanently protected against uncompensated cooling or "chill."

When a normal adaptation fails a series of abnormal reactions generally occurs. For example, in a "frigo-sensitive" subject the effects of exposure to a cold and changeable climate include repeated lowering of the body heat, abnormal contraction of the superficial blood-vessels, and alteration of the distribution of the blood, with reflex disturbances of the nervous, digestive, metabolic, and eliminative functions. Another significant effect of lowering the temperature of warm-blooded animals is an increase of liability to many forms of microbial infection. On the other hand, if in the same frigo-sensitive subject external heat or friction are skilfully applied, the subnormal temperature of the skin and of the body is restored to normal, and the peripheral circulation, metabolism, and circulation are increased. So far, then, as the functional disorders provoked by external cold are concerned, it is clear that a curative influence may be brought into play which is akin to the provoking influence.

Speaking generally, the object of physical treatment is to bring physical forces into action upon the surface of the body, so as, by a new series of impressions, to produce favourable reactions within the body. The student of physical treatment has to explore these different forms of surface action and to endeavour to define their precise application in all states of defective and abnormal function.

Physical Treatment as a Whole.

The stimuli received by the body at any time operate not singly but as a whole. Further, they are in process of transformation, for one form of energy always generates another form of energy. The green leaf at a given temperature and moisture receives rays and transmutes them into chemical, thermal, and electrical effects. The normal skin also, like the green leaf, has the power of receiving and transmuting energy. Climate includes humidity, warmth, movement, radiation, electricity, and perhaps something more. The human body is able by its organs of contact to respond at the same time to all these external stimuli. Physical treatment provides a new physical medium, by means of which defective contacts are re-established between the body and the energy outside the body. The normal contacts of life and the integrity of the reactions which are essential to health are in this manner restored.

The optimum physical treatment gives the optimum physiological reaction. It is questionable whether this is ever effected by simply increasing a single kind of stimulus. It is generally produced by a series of harmonious and increasing impressions of more than one form of energy. Thus, in an effervescent or carbonic acid bath the relative external heat and mechanical and chemical stimulation in the gas are combined with relative cold in the water, acting over constantly changing areas in the skin, the whole making up a special form of circulatory stimulation. Again, a light bath in the Alps combines an extreme degree of cold with unusual radiant energy. In a sea or surf bath all these elements are united in varying degree.

The resultant of impressions may be considered as *sedative* or *stimulant*. Baths and climates are regarded as stimulant if they increase, and sedative if they diminish, nervous and circulatory activity. But in practice more often than not both sedative and stimulant effects can be traced under all forms of physical treatment. In practice, especially in the treatment of rheumatic conditions, sluggish reactions in one part are often stimulated at the same time that over-action in another part is allayed.

It is, moreover, worthy of note that mental effects follow physical causes. The Aberdeen philosopher, Bain, used to say: "Heat is a typical form of passive physical pleasure."

[1] Faure, Felix: Internat. Congress Physiotherapie, Paris, 1909.

Dosage.

Duration is the "fine adjustment" of dosage and should be precisely governed by individual reaction. It is known that thermal applications given in series produce in favourable cases better and more rapid reactions as day follows day. The new phase of circulation following thermal baths may continue for several hours with little change, and, if the patient is not chilled in the interval, this improved phase may not be entirely spent before the next bath. For this reason chronic maladies in particular are often benefited by a properly dosed and spaced course of applications, given in specially warmed buildings and spread over several weeks. After such a course a lasting improvement in the response of the body to external stimuli is often obtained.

A course of such treatment is tantamount to providing an artificial climate, the operative factors of which can be varied at will. Although the change of surroundings can be only temporary, the activity of the physiological response is so great that results are produced quite out of proportion to the duration of the stimulus.

Examples.

Many examples could be cited to illustrate the changes in the deep parts that may be effected by surface actions.

1. A bruised or wounded limb becomes cold and dusky, with tender and painful swellings or scars, unresolved exudations, and increasing limitation of power and movement. If such a limb be subjected to a bath of whirling or agitated water at 112° to 115° F. the arteries and capillaries dilate and the immersed part takes on a rosy pink colour. The scars and muscles can now be freely manipulated without pain, the joints moved more easily than before, and with repeated treatment the processes of healing and resorption are greatly accelerated.

2. Another example of both cutaneous and deep reactions is afforded by subthermal baths, such as are given as a sedative measure for mental cases. During the war they were used in England as "sedative pools" for conditions of nervous and mental shock. Men so affected were as a rule restless, often sleepless, with subnormal deep and surface temperatures, and a small rapid pulse. They were made to recline for an hour or more in gently flowing water at from 92° to 94° F., according to the season. During the bath the heart's action became slower and more tranquil, the surface and deep temperatures returned to normal, and sound sleep followed.[1]

3. The effervescent bath also, given at subthermal temperatures, is often of great assistance in cases of myocardial weakness with a chilly skin and contracted arteries. During the bath the radial artery may be observed to dilate, the pulse to become slower and stronger, and the parts immersed to flush from relaxation of the capillaries. This is an illustration of the autonomous reaction of the cutaneous capillaries to physical impressions, described by Krogh.

4. An impressive example of deep reaction to surface stimuli is seen in the effect of cold upon metabolism. The exposure of the body to moderate degrees of cold, in baths or fresh air, may in health much more than double the activity of metabolism. Leonard Hill, among others, has shown how important such facts have become in the treatment of chronic disease, and that cooling of the body is one of the most powerful of therapeutic weapons.

5. Winternitz, in his last published paper, set forth his experience of the use of cold in tuberculosis, and formulated rules for its application. It is only in the present century that it has been recognised that this infective disease, in whatever part of the body it may be situated, is best treated not by specific but by physical remedies. It should, moreover, be noted that in tuberculosis these remedies act best not singly but when judiciously combined after the pattern of Nature, as when radiant energy is conveyed to the body cooled by moving air or water.

The Physical Physician.

The reader may now be prepared to agree with Vierordt that the serious study of physical treatment marks a turning-point in the history of medicine. The work of reclaiming this field of practice was begun by clinical physicians in the last century. The trained and qualified physical physician will have for his special task the investigation and treatment of incipient and chronic diseases. He belongs to the school which pursues the study of disordered functions. He finds the nerve centres irresponsive or oversensitive; the blood-vessels, in general or in particular areas, contracted or relaxed; the normal distribution of the blood displaced; the rhythm of the heart or of the digestive functions disturbed; there are failures of elimination; metabolism is increased or diminished; the equilibrium of body heat is lost; the resistance to infection has lapsed. He believes that disturbances of function such as these are characteristic of chronic disease, and experience teaches him that, as van Leyden said, these disturbances are more amenable to physical remedies and change of habit and of diet than to drugs. His concentration of mind upon the functional element in all disease obliges him above all to investigate and measure the reactions to external impressions, because the character of these responses, changing from day to day, furnishes the key both to his diagnosis and to his treatment. His rôle is therefore that of a therapeutic research worker.

[*Subsequent articles will be devoted to continental practice and teaching and to the physical treatment in rheumatic diseases.*]

[1] Fox, R. F.: Physical Remedies for Disabled Soldiers, London, 1917.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Backward Child.

FIFE is one of the most important educational areas in Scotland and any facts about it are likely to be paralleled elsewhere. Much significance therefore attaches to observations made in this county which are described in the annual report of the Scottish Education Department. It appears that of the pupils who left school in 1926–27 (excluding those who died, migrated, or were untraced) 64 per cent. left without having completed two years of post-primary education—that is without having qualified even by attendance for the award of the day-school certificate (lower). This certificate is the leaving certificate of the day school; as such it should be obtainable by any pupil of normal ability who has been in regular attendance at a day school up to the statutory age and has worked with ordinary diligence. Yet 64 per cent. fail to qualify for it. Others leave from the senior division without ever participating in any form of post-primary education. The chief causes of the retardation are said by the teachers to be, in order of frequency, lack of ability, migration, ill-health, low power of application, late enrolment, irregular attendance apart from health, and unsatisfactory home conditions. It is hinted that a jury composed not entirely of teachers and headmasters might possibly have added other items to this catalogue.

To speak generally, not more than from 10 to 12 per cent. of our school-children, including mentally defective children, are of less than normal intelligence; yet 64 per cent. fail to reach the stage of the day-school certificate (lower). What is needed as a remedy is individual attention by a patient, intelligent, and sympathetic teacher. But behind this there is the question whether we are not asking too much of the average child of 12. Suggestions are made for "a very slight lightening of the ship." This raises the question of the functions of the secondary schools. There is a growing disposition

on the part of parents to secure to their children the advantage of the secondary schools; but owing partly to this leakage from below and a further leakage at the secondary school stage, "the proportion desiring a leaving certificate was extremely limited."

This report is a very important deliverance, since the whole problem of the higher education is based upon the leaving certificate. Knowing the long history of struggle and difficulty in the establishing of the leaving certificate as an active method of maintaining the intellectual standard, I can only regret this note of pessimism; but, on the whole, to those that have known Scottish education for 50 years, the wonder is that the certificate has been so successful. As the psychological experts are now getting a better grip of educational conditions, there is a tendency to belittle "examinations" as a mental test; but this is only a passing phase. In actual practice, the examination test, in the past generations, has worked wonders, and if in later years it has become over-exacting, this is merely a defect of every such general method of testing. One cannot but revert to the same struggle in Germany nearly 100 years ago. A full account of it is given in Matthew Arnold's "Schools and Universities in Germany." This book is probably not now read very widely; but it was one of the stimulants that led to the British equivalent of the German leaving certificate (Abiturienten examen). In Germany the specialisation of the schools probably began at too early a stage and became too rigid; but there can be no question that the elaborate scheme framed by von Humboldt originally did place German secondary education on an extraordinarily efficient basis. The Scottish system had to rest on a different type of existing school; but, on the whole, the results must be pronounced good. No doubt the special problem emerging at the end of the elementary school course will now receive much more detailed attention and we may hope that the results will be satisfactory. The economic question is troublesome; but many forces are now converging to persuade the general public that the condition of education beyond the elementary stage is one of the cardinal methods of preparing an efficient people and, in the end, of improving economic conditions.

Hospital Amalgamation.

The annual report of the Edinburgh Royal Maternity and Simpson Memorial Hospital states that the total number of cases treated last year was 3205, compared with 3117 in the previous year. As regards the proposed amalgamation with the Royal Infirmary, some progress has been made. The report points out that it is generally recognised that the situation has considerably altered since Nov. 16th, 1923, when the project of amalgamation was first mooted, owing first to doubts which have arisen as to whether the provision of maternity service is not the province of the State rather than of the voluntary hospital; and, secondly, the possible effect of the De-rating Bill. Committees representing the Royal Infirmary and the hospital have discussed the maternity problem in Edinburgh, and how many beds the managers of the Royal Infirmary should be expected to provide in the new buildings to be erected on the site of George Watson's School, and have arrived at the conclusion that not less than 120 beds are needed.

Dr. A. S. Macgregor, medical officer of health for Glasgow, has issued a circular to owners and occupiers of premises which are liable to rat invasion, calling attention to the fact that since the Rats and Mice (Destruction) Act, 1919, came into operation an endeavour has been made by the Department of Agriculture for Scotland to inaugurate a rat week in the spring of each year, a period when repressive measures are most likely to be successful. Dr. Macgregor says that the services of the inspectors of the Public Health Department, in an advisory capacity, are made available to any person wishing to coöperate.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Urgent Health Problems in Ireland.

Dr. E. E. Stephenson, the Chief Medical Adviser of the Department of Local Government and Public Health, acts wisely in taking the public into his confidence from time to time about the health problems which are of importance to the country. Last week he gave a useful and informative interview to the press. Among other things he stated that there was an urgent necessity for the appointment of county medical officers of health in the various counties where such appointments had not yet been made. Whilst the novelty of the situation and adverse financial circumstances had caused delay, further delay could not be condoned. There was no county in the Free State, he said, that was without special health problems calling for solution. Among those of the most pressing importance were the eradication of typhoid fever and diphtheria, the prevention and correction of crippling, the reduction of infant mortality, and the protection of women against the special dangers associated with childbirth. In some counties, notably Limerick and Monaghan, the maternal mortality-rate was so high as to establish an incontestable need for organised supervision over midwifery practice. Certain chronic areas of typhus infection, notably in Kerry, Galway, and Donegal, were not alone a danger to the community, but a reproach to the public administration and a menace to the credit of the country. Again the recent disastrous experiences at Carrick-on-Shannon, where some 50 people contracted typhoid fever from a contaminated water-supply, was largely due to the absence of an expert controller of the public health services. Dr. Stephenson drew attention to the high mortality in Ireland from heart disease, much of which was preventable. The early discovery of the conditions leading to heart disease could be secured by medical inspection of school-children. With regard to trachoma and other causes of blindness he said that the pensions payable in the Irish Free State on account of blindness due to preventable causes amounted to £10,764 a year. Among 12,000 children inspected in Dublin 7000 suffered from defects, of whom 5000 required immediate treatment.

Irish Medical Association.

At its last meeting the council of the Irish Medical Association nominated Mr. P. E. Hayden, Vice-President, for election as President. Mr. Hayden is surgeon to Jervis-street Hospital, and a member of the Council of the Royal College of Surgeons in Ireland. The Council nominated Dr. Eugene Byrne, of Slane, Meath, for the Vice-Presidency. He is a very old member of the Association and has been a member of the Council for several years.

PARIS.

(FROM OUR OWN CORRESPONDENT)

The "Tuscania" Incident.

THE steamship *Tuscania* and her passengers ill with small-pox have not roused in France as much interest as in England. In fact, were it not for the diplomatic side, the incident would have been considered of little importance. The reason is simple. In France vaccination against small-pox is not a matter for discussion; it is an accomplished fact. There may be a few doctors who, in theory at least, consider that vaccination may under certain circumstances be harmful or ineffective. But even they do not always accept the responsibility of forbidding vaccination in their practice or among their own family. No case of the kind has occurred, but it is certain that a court of law would award big damages against the family doctor if a child died of small-pox

under his care, and it was established that he had forbidden vaccination. French law makes vaccination compulsory for every infant before completing its second month of life, and fines its guardians in case of default.

Laws are accepted in France only if they are justified by necessity and use, and this is certainly the case with compulsory vaccination. The last real epidemic of small-pox occurred in France during the war of 1870–71. Shortly afterwards vaccination was made compulsory, and nothing hindered the execution of the law, for everyone had in mind the dreadful remembrance of the small-pox fatalities among the civilian and military population during the Siege. Nor has this been forgotten since. The first thing that happened in 1914 after the departure of the troops towards the frontier was the vaccination of the civilian population, creating the first queues at the gates of hospitals or dispensaries. If the facts are analysed further it is realised at once that small-pox in France is a particularly severe disease and has been so throughout the whole history of the country. Case mortality has rarely been under 50 per cent. and has reached 80 or even 90 per cent. in certain epidemics. This explains much. The figures are in complete contrast with those gathered in English statistics, but they are nevertheless quite trustworthy. The same fear of consequences ensures that every case of small-pox is registered and nearly all are sent to hospital, so that it cannot be argued that only severe cases are registered. There is no doubt on this point, and I have often observed, even in the Indian statistics, a similar difference in mortality between the five French towns and the British towns of the same land, as given by the Health Committee of the League of Nations.

What is the efficiency of the compulsory vaccination law? To this question every Frenchman (with the exceptions mentioned above) will answer that the law is perfectly efficient—if it were not, the law would have dwindled out of use, as it has almost done for the compulsory notification of measles. In addition to the compulsory vaccination of infants, new vaccination is exacted for entrance to school, to military service, before taking up work in public or private offices, at matriculation for universities, and so on. Hence at several points of life new vaccination becomes an obligation by the simple mechanism of public life. In case of epidemic, actual or threatened, powers have been given by law to the *maires* of each town or borough to render vaccination compulsory for all inhabitants, whatever their age. The *préfets*, who are at the head of the administration of each department (county), have powers of compulsion should the *maire* default.

At the present time there are hardly any cases of small-pox in France. When cases do occur it is invariably because there has been some neglect in the application of vaccination, and the epidemic is stopped at once by immediate vaccination of the surrounding population. In fact, were the French territory closed in by a Chinese wall, small-pox would never be seen. Nearly all the cases are foreigners who have escaped vaccination, for the most part natives from North Africa or Spaniards, who are always ready by some trick or other to elude collective vaccinations at the frontiers. One thing is certain; there is no chance for tourists in France to catch small-pox unless they hire a weekly room in the filthy slums where the immigrants dwell on their arrival, and even there the chance is small.

Anti-Diphtheria Vaccination.

Though inoculation against typhoid is compulsory in the army, small-pox is still the only disease against which civilians in France are obliged to be immunised. Two years ago the Government explored the possibility of compulsory prophylaxis against diphtheria, but it was generally agreed that any legislation to this effect should be postponed, official aid being meanwhile granted to propagandist measures. The mode of vaccination is by the anatoxin (formolised toxin), studied in France by Ramon, one of the heads of the Pasteur Institute. This has been investigated clinically by Prof. Lereboullet with his assistants, especially Dr. Gournay, and by Prof. Zoeller, of the military school of the Val-de-Grâce. The Pasteur Institute furnished 15,000 doses of anatoxin in 1925 and 300,000 in 1928.

The Ministry of Health has embarked on a special "week of propaganda for diphtheria vaccination" which began last Monday with the broadcasting of a short lecture by the Minister himself, Mr. Loucheur, in which he called attention to the fact that every year 3000 children die from diphtheria and that this could be prevented by inoculation. Special lessons on the subject are being given in every school in the hope that the children will repeat at home what has been told them and that the teaching will thus reach the parents. Lectures are to be broadcasted, and newspapers throughout the country are publishing special articles to spread the gospel of immunisation against diphtheria.

Public Health Services.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 13TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 339 (last week 273); scarlet fever, 1764; diphtheria, 962; enteric fever, 32; pneumonia, 1743 (last week 2158); puerperal fever, 44; puerperal pyrexia, 111; cerebro-spinal fever, 26; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 23; dysentery, 9; ophthalmia neonatorum, 112. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 26 counties: London, 29 (viz., Bethnal Green, 8; Kensington, 2; Lambeth, 1; Paddington, 1; Poplar, 3; St. Marylebone, 1; Stepney, 10; Wandsworth, 2; Westminster, 1); Cambridge, 1 (Borough); Chester, 1; Derby, 18; Durham, 42; Isle of Ely, 3; Essex, 26 (viz., East Ham, 1; West Ham, 23; Grays, 1; Chelmsford (R.D.), 1; Huntingdon, 4; Kent, 2 (viz., Gillingham, Gravesend, 1 each); Lancaster, 13 (of these Leigh, 6); Leicester (C.B.), 1; Lincoln, Parts of Holland, 4; Parts of Lindsey, 1; Middlesex, 5 (viz., Acton, 2; Edmonton, 1; Hendon, 1; Willesden, 1); Northampton, 39 (of these County Borough, 38); Northumberland, 6; Nottingham, 1; Peterborough, 7 (Borough); Stafford, 44 (of these Stoke-on-Trent, 42); Sussex East, 2 (Brighton); Wilts, 15 (Swindon); Worcester, 1; Yorks, West Riding, 33; Brecknock, 3; (Brynmawr); Glamorgan, 26; Monmouth, 11; and from the Port of Cardiff, 1.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on April 16th–17th was as follows: Small-pox, 200 under treatment, 10 under observation (last week 162 and 10 respectively); scarlet fever, 1501; diphtheria, 1767; enteric fever, 12; measles, 103; whooping-cough, 1192; puerperal fever, 20 (plus 5 babies); encephalitis lethargica, 79; poliomyelitis, 4; "other diseases," 58. At St. Margaret's Hospital there were 14 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 1 (0) from enteric fever, 58 (0) from measles, 6 (2) from scarlet fever, 120 (40) from whooping-cough, 39 (6) from diphtheria, 48 (12) from diarrhœa and enteritis under two years, and 247 (47) from influenza.

The death provisionally classified to small-pox was assigned to Acton (M.B.) Great towns reporting 10 or more deaths from influenza were Birmingham 21, Manchester 12, Liverpool reported 19 deaths from measles, Cardiff 7, Birmingham 6. From whooping-cough, Manchester reported 10 deaths, Liverpool 6, and Salford 5. No great town reported more than 5 deaths from diarrhœa.

Deaths from Small-pox.—The fatal case of small-pox reported at Acton was that of a woman, aged 28, four months pregnant in her third confinement. Dr. D. J. Thomas, medical officer of health for the borough, informs us that she joined the *Tuscania* at Port Said on March 23rd, landed at Liverpool on April 1st, and reached her home in Chiswick

the following day. She had not been vaccinated since infancy. She became ill on April 5th, with a temperature of 101° F., and backache which was attributed to the pregnancy. She aborted on April 8th, but the pain in the back persisted. On April 9th her doctor received a telephone message that she was dead. On examination he noticed a purpuric rash round the groin, and asked Dr. Thomas to see her. The doctor had not been informed by the patient's friends that she was a small-pox contact, nor had the public health department been notified that she was ill, though inspectors from the department had visited the house and inquired as to her welfare. Dr. Thomas found a purpuric rash on both groins extending on the right side as far as the axilla, there was subconjunctival hæmorrhage, and the beginning of a focal rash (two spots) on the right forearm. On the same day the husband, who was ill, was seen by Dr. Thomas, who found a rash just coming out and becoming confluent. He died on April 16th at Joyce Green Hospital, Dartford.

The number of stillbirths reported during the week was 299 (corresponding to a rate of 40 per thousand births), including 54 in London.

Correspondence.

"Audi alteram partem."

THE NEW IMPORTANCE OF RADIUM.

To the Editor of THE LANCET.

SIR,—In the report of the Radium Subcommittee of the Committee of Civil Research, which you summarised last week, allusion is made (p. 5) to the so-called "surgery of access," which has sprung into existence as the value of radium in medical treatment has been progressively recognised. "We do not doubt," the report states, "that as further knowledge is obtained in regard to the possibilities of this radium-surgery, its use will develop rapidly, and in an increasing measure it will replace the use of the knife in the treatment of cancer." Personally I think a statement like this is likely to mislead not only the public but the medical profession. The main point is whether in the first instance a tumour is susceptible or not to irradiation. Obviously surgery which provides access to a tumour is not going to influence this. Secondly, surgery of access only enables a localised method of treatment to come into play. The logical development of our present-day knowledge is the use of large quantities of radium at a distance from the body, which enables a wide field to be covered and a fairly homogeneous intensity of irradiation to be given to a moderate depth below the surface of the body.

I am, Sir, yours faithfully,

G. E. BIRKETT.

Manchester and District Radium Institute,
April 20th, 1929.

THE "PHYSIOTHERAPY CLINIC" AND THE PRACTITIONER.

To the Editor of THE LANCET.

SIR,—Dr. Ray's letter in your last issue calls for comment. To my mind physiotherapy is too wide a term. It should surely be divided into balneology and electro-therapeutics, the latter requiring skilled and qualified operators. In a leading article which you published some months ago on unqualified electro-therapeutists you called proper attention to this crying evil. Before then I myself had drawn the attention of Dr. Ray and others to the proper remedy for this dangerous practice, which can only be stopped by legislation. The political section of the British Medical Association has, I am glad to say, taken the matter up and it will be pushed through in due course. My suggestion was that no one should be allowed to carry out such treatment unless he had passed a thorough examination in the physics of electro-therapeutics and held a certificate to that effect issued by a proper board of examiners. Then, and only then, will doctors be justified in sanctioning such treatment at the various institutions. Meanwhile they must find time to treat their own patients and to charge accordingly.—I am, Sir, yours faithfully,

W. S. WHITCOMBE.

Harley-street, W., April 20th, 1929.

FUNCTIONAL NERVOUS DISORDERS IN THE SERVICES.

To the Editor of THE LANCET.

SIR,—I was somewhat surprised to notice that in the discussion at the Royal Society of Medicine (War Section) on April 8th (reported in your issue of April 13th, p. 773) no mention was made of the examination of the teeth. Apart from the presence of oral sepsis it is recognised that in certain cases unerupted and impacted molar teeth may, by reflex irritation from pressure of the second molar, be the causal factor of such conditions as neurasthenia, hysteria, chorea, epilepsy, or even insanity. This suggests to my mind that routine radiographic examination of the teeth would assist the diagnosis and indicate a line of treatment. Many cases in which such impacted molars have been found and extracted have greatly improved, and a certain percentage have completely recovered. I know of a physician who, acting as honorary medical adviser to a missionary society, has stipulated that all candidates shall have dental radiograms taken before they are finally accepted as he is convinced that, if the large number of Europeans who are employed and reside in the East had such an examination carried out, many cases of so-called tropical neurasthenia would never occur.

I am, Sir, yours faithfully,

J. D. KIDD, M.B., Ch.B., D.M.R.E. Camb.

Cavendish-square, W., April 22nd, 1929.

INQUIRY INTO THE ÆTIOLOGY OF CANCER

To the Editor of THE LANCET.

SIR,—In THE LANCET of June 16th last (p. 1250), an appeal was made to your readers to help in a statistical research into the ætiology of cancer, by answering a schedule of questions relating to a cancer patient and a non-cancer patient of the same sex and about the same age as control case.

The response to this appeal, though somewhat disappointing, was sufficient to justify printing the schedules and starting the investigation, and some medical practitioners have rendered most useful service by their careful work in completing these forms. In order that sufficient data may be secured more volunteers are needed, and since many of your readers doubtless did not see or give careful consideration to the first appeal, may I again ask that any who are in touch with cases of cancer, whether in general, specialist, or hospital practice, and who are prepared to devote a few hours to assist in this research, will communicate with me at the Galton Laboratory? Unfortunately, it is not possible to offer any kind of remuneration for this service, but I feel sure that there are some who will be prepared to make this voluntary sacrifice of a little time to help in a form of cancer research which can only be carried out by team work.

I am, Sir, yours faithfully,

PERCY STOCKS, M.D., D.P.H.,
Reader in Medical Statistics, University of London.

Galton Laboratory, University College, London, W.C.,
April 23rd, 1929.

THE ÆTIOLOGY OF UROLITHIASIS.

To the Editor of THE LANCET.

SIR,—In your issue of April 20th (p. 847) Dr. Levick says that he does not think that Europeans in the tropics suffer from urolithiasis as the result of excessive exposure to the solar ultra-violet rays. I have no doubt that Dr. Levick is right and, so far as

I know, Europeans in the tropics do not suffer from urolithiasis to a greater extent than their fellows in temperate climates. My suggestion referred to the natives who compose an overwhelming proportion of the populations in tropical countries and who from the nature of their clothing are exposed to the full effects of the ultra-violet rays. This applies especially in the case of children who are also, I believe, the worst sufferers from urinary calculi. Reliable statistics relating to the incidence of calcium phosphate stones in tropical countries are difficult to obtain; but it would be interesting to compare the relative frequency of stone in the European and native populations over a large series of cases. I do not suggest that excessive exposure to ultra-violet light is the only cause of the condition. No doubt sweating and other factors play a part in the ætiology of tropical urolithiasis, but the production of urolithiasis in experimental animals by irradiated ergosterol suggests that further investigation along such lines might throw valuable light on the influence of excessive solar irradiation in producing urinary calculi.

I am, Sir, yours faithfully,

J. CLIFFORD HOYLE.

Pharmacological Laboratory, University of Cambridge, April 23rd, 1929.

Obituary.

SIR GEORGE ADLINGTON SYME, K.B.E., M.B. MELB., F.R.C.S. ENG.,

FIRST PRESIDENT OF THE AUSTRALASIAN COLLEGE OF SURGEONS.

WE regret to announce the death of Sir George Syme, President of the College of Surgeons of Australasia, which has been announced by telegram during the week.

George Adlington Syme was born on April 13th, 1859, the son of Mr. George Alexander Syme, and was educated at Wesley College, Melbourne, the University of Melbourne, and later at King's College, London. He graduated in medicine at the University of Melbourne in 1881 and was for two years resident medical officer of the Melbourne Hospital. In 1885, being already M.R.C.S., he took the diploma of F.R.C.S. Eng., and returning to Australia became demonstrator of anatomy in the University of Melbourne in 1887, in which year he was elected out-patient surgeon to the Melbourne Hospital. In 1903 he became full surgeon to the institution, and held this position for 16 years, throughout which period he lectured, first on anatomy and later on clinical surgery, acting also as an examiner at the University in both subjects. He was also surgeon to the police force of the city and honorary surgeon to St. Vincent's Hospital. He was for many years a special correspondent of THE LANCET and was also a prominent supporter of the British Medical Association, being three times President of the Victorian Branch, and a frequent President of various sections at the annual congresses of the Association. He acted as chairman of the Royal Commission on Health for the Commonwealth of Australia, and in many other directions was recognised alike as a sound doctor and administrator.

On the outbreak of war Sir George Syme received a commission as Lieut.-Colonel in the Australian Expeditionary Force and became chief of the surgical staff of the first Australian General Hospital. Later he was appointed consulting surgeon to H.M. Hospital Ship *Gascon*, and at the close of hostilities retired with the rank of hon. colonel, becoming later a member of the medical advisory committee and consulting surgeon to the repatriation commission. In recognition of his military and public services he was created K.B.E. in 1924.

During the last two years Sir George Syme was deeply interested in the foundation and promotion of the Australasian College of Surgeons, and in the difficulties which beset the College on its inception he proved a brave and sincere advocate of the cause which he had at heart. The foundation of the College was viewed with considerable suspicion by many members of the British Medical Association, and by many general practitioners, who considered that the creation of an institution empowered to give an honorary degree might reflect on their own status, and indeed influence for the bad their professional earnings. The aim of the College as set out by Sir George Syme was to promote the art and science of surgery (using the words of the charter of the Royal College of Surgeons of England), and also to act as an organised scheme for post-graduate training in surgery either for graduates wishing to take a higher degree in surgery or for practitioners who with or without such a degree wanted to acquire or improve their surgical skill. The first annual meeting of the College took place in April, 1928, and considerable criticism was meted out to the scheme, but an address delivered by Sir George to the Victorian Branch of the B.M.A. went far towards reconciling adversaries: for he there warned his audience that the newly founded American College of Surgeons might prove a formidable rival unless an analogous institution arose in Australia. In the autumn of 1928 Sir George proceeded to Boston and received the honorary Fellowship of the American College.

Syme was respected and trusted by such a large number of friends and colleagues both within and without his country that his death leaves a real and widespread sense of loss. He is survived by his widow, the daughter of Mr. William Berry, of New Zealand, one son, and two daughters.

ALFRED TAYLOR SCHOFIELD, M.D. BRUX., M.R.C.S. ENG.

Dr. Schofield, whose death occurred at Bournemouth on Saturday last, in the eighty-second year of his age, was for many years known as an enthusiastic worker in support of health and educational causes. He was born in 1846 at Roach Bank, Rochdale, where his father, Robert Schofield, resided. He was educated at Elizabeth College, Guernsey, and entered the medical profession through the medical school of the London Hospital where he was a prizeman. In 1883 he took his conjoint diploma and a year later the M.D. with Honours of the University of Brussels. He practised for a considerable time in Harley-street, and a list of his public activities shows well the range of his sympathies. He was at one time chairman of the Parents' National Educational Union; he was a member of the Council of the Sanitary Institute, of the Royal British Nurses' Association, of the Church Sanitary Association, and of the District Nurses' Association. What may be styled domestic physiology and psychology, especially in their relation to women, were made the subjects of a large literary output; his handbook on personal domestic hygiene, and a volume treating of the borderlands of science proved acceptable to many readers. No one was a more enthusiastic preacher than Schofield of the truth lying behind the aphorism that cleanliness is next to godliness. Dr. Schofield married nearly 60 years ago Miss Frances Vaughan Jackson, by whom he had one daughter.

JAMES PRINGLE PARK INGLIS, M.D. EDIN.

WE have to record the death, on April 10th, of Dr. J. P. P. Inglis, deputy medical superintendent of Leavesden Mental Hospital, Watford, in his fifty-third year. He was the son of the Rev. R. C. Inglis and was born at Berwick, where he was educated at the Grammar School. Thence he went to the University of Edinburgh, and on graduating in 1905 became clinical assistant to the late Sir Thomas Clouston at the Royal Asylum. He later held a similar appointment in London at the West End Hospital for Nervous Diseases, and after experience in mental hospitals at Portsmouth and Canterbury, entered the service of the Metropolitan Asylums Board in 1909. In this service, with appointments at

Caterham, the Fountain Mental Hospital, the Darenth Training Colony, and lastly at Leavesden, he remained until his death, the only interval being caused by the war, during which from 1916–19 Dr. Inglis served with the Royal Army Medical Corps as Mental Specialist to the Forces in Egypt. For his work in this capacity he was mentioned in despatches. Dr. Inglis was married but leaves no children.

DUNCAN OTTO MACGREGOR, M.B. GLASG.

THE death of Dr. D. O. Macgregor, superintendent of Glasgow Victoria Infirmary, removes a well-known figure from medical circles in the West of Scotland. Sixty-one years of age, he was born at Tranent and was educated at Glasgow Academy, George Watson's School, and Berkhamstead School before going to study medicine at Glasgow University. In his college days he was a keen Rugby player. After graduating in 1890, he gained post-graduate experience at Leipzig and as resident house physician at Glasgow Royal Infirmary, and house surgeon at Glasgow Maternity Hospital and the Northern Infirmary, Inverness. Then he took up private practice, first at Cardiff and later in London, and it was with considerable knowledge of general medical work that he started his career as medical superintendent of the Glasgow Victoria Infirmary 29 years ago. In this new sphere his attention turned to the use of X rays and as radiologist to the hospital he later did a great deal in this special department. An able administrator of sympathetic personality, he was popular with both staff and patients. Outside his work at the infirmary he was deeply interested in Highland affairs, and especially in the Clan Gregor.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LORD MOYNIHAN.

Lord MOYNIHAN (formerly Sir Berkeley George Andrew Moynihan, Bart., K.C.M.G., C.B.) was introduced with the customary ceremony in the House of Lords on Wednesday, April 17th, on his elevation to the peerage. His introducers were Lord Dawson of Penn and Lord Illingworth.

SCHOOL MEDICAL SERVICES.

The debate on the vote for the salaries and expenses of the Board of Education was opened on May 23rd by Lord EUSTACE PERCY, who spoke of the need for extending the scope and number of special schools and nursery schools. Mr. D. M. COWAN welcomed the establishment of an Educational Research Committee for Scotland, and Mr. JOHNSTON criticised the small amount of money spent in Scotland on the physical welfare of the child compared with that spent on education. Major ELLIOT spoke of the desirability of unification and amalgamation of health services, and promised to draw the attention of the Secretary of State for Scotland to the views of the Committee that greater attention should be paid to the physical condition of school-children.

HOUSE OF LORDS.

WEDNESDAY, APRIL 17TH.

LOCAL GOVERNMENT (SCOTLAND) BILL.

The Local Government (Scotland) Bill was considered on report.

Provisions Relating to or Consequent on Transfer of Functions.

On Clause 5 the Earl of ONSLOW (Paymaster-General) moved a drafting amendment to ensure that the section shall apply to a body such as the Royal Asylum of Montrose.

The amendment was agreed to.

The Earl of ONSLOW further moved after Subsection (2) to insert:—

"Where in the constitution of any trust or other body whether corporate or not, provision is made for the appointment as trustees or members of the governing body of one or more members of a district board of control whose functions are by this Act transferred to two or more transferee authorities, the General Board of Control for Scotland may, after consultation with the trustees of governing body by order provide for the transferee authorities concerned jointly or a joint committee thereof or for the transferee authorities severally nominating trustees or members of the governing body in place of the members of the district board of control, and the constitution of the trust or other body shall have effect subject to the provisions of any such order."

He explained that this amendment was also designed to meet a case such as that of the Royal Asylum of Montrose where, under the constitution, the district board of control had a right to appoint representatives to the governing body. The district board would now disappear, and its functions were transferred to two separate authorities, the county councils of Angus and Kincardine. The amendment authorised the General Board of Control to provide that the appointment of these representatives should be made either by the two county councils jointly or by a joint committee; or so many appointments might be given to the one county council and so many to the other.

The amendment was agreed to.

Medical Officers of Health and Sanitary Inspectors.

Viscount YOUNGER OF LECKIE moved to leave out Clause 35, and to insert the following new clause:—

"On a vacancy arising after the commencement of this Act in the office of medical officer of health or sanitary inspector of a small burgh, the medical officer of health or sanitary inspector, as the case may be, of the county within which the burgh is situated shall *ipso facto* become the medical officer of health or sanitary inspector for the burgh, and such proportion of the salaries and expenses of such officer as the county council and the town council may agree shall be paid by the town council to the county council, and, failing agreement, as may be determined by the Department of Health."

He said that his object was to introduce into the clause the post of sanitary inspector as well as the medical officer of health. It was very important that county sanitary inspectors in Scotland should in similar circumstances be always the sanitary inspectors of the small burghs. In that way they would get a much better official, a man of higher standing, of greater capacity, as well as a more independent man.

The Earl of ONSLOW said that the case in regard to the medical officer of health had been decided by their lordships, who had accepted the principle laid down in the Bill, but in regard to the sanitary inspector rather different considerations presented themselves. In some of the smaller burghs of Scotland at the present time only a very small sum was available for the payment of the sanitary inspector, and the consequence was that the sanitary inspector very often was a person who had not the qualifications which were laid down in Subsection (2) of the clause. The object of that was to ensure that all sanitary inspectors should be thoroughly qualified persons. In a burgh which had a sanitary inspector of its own, two sanitary inspectors would be concerned with the health services of the burgh. The county sanitary inspector would be concerned with the major sanitary services, and the burgh sanitary inspector would be concerned with the minor sanitary services, one being the matter of lodging-houses. It had been represented very strongly in Scotland by many of the smaller burghs, and it was eminently desirable that they should have a sanitary inspector to themselves, and those which had made this representation most strongly were the burghs which were seaside resorts. But if these burghs were to maintain sanitary inspectors they must be thoroughly qualified. If they could not afford to pay for such an official the burgh must come to an arrangement with the county. In all probability in such a case the county sanitary inspector would be appointed, but he did not say that it was absolutely necessary that he should be. He hoped that their lordships would accept the Bill as it stood in view of the strong feeling in the small burghs on the question.

The Earl of MAR AND KELLIE said that it was absolutely essential that the sanitary inspector should be a county official. The work of the medical officer and the sanitary inspector was interlaced and interwoven. They constantly had to carry out their duties together, and if they were appointed by two different authorities, and controlled by those authorities, there was bound to be friction. He hoped the Government would accept the amendment.

The Duke of BUCCLEUCH said he agreed with the noble earl who had just spoken that it was most essential for efficient administration that the amendment should be accepted. The health of the public throughout the county, including the burghs, should be the first consideration, and should come before any susceptibilities which might exist. It was perfectly well known that there had been cases in the past where the medical officer and the sanitary inspector had been at loggerheads, and the result had been, if not disastrous, at all events very unsatisfactory.

The Marquess of SALISBURY (Lord Privy Seal) agreed that it was of supreme importance that these sanitary

services should be carried out by competent men. But that was provided by the Bill. No man was to be appointed henceforth who had not got a proper certificate. The sanitary inspector ought to be under the medical officer, but he would not be under him for all purposes even if Lord Younger's amendment was passed. In process of time probably those interested in Scottish legislation would see that the sanitary inspector was placed for all purposes under the medical officer of health. When that time came probably it would be a very good opportunity for the general reconsideration of the position. In the meantime the Government had met part of the difficulty.

The Earl of STAIR said he hoped that Lord Younger would press his amendment. The position of county councils was going to be difficult enough in taking over duties from different authorities without having to decide between existing sanitary inspectors in the smaller burghs. It was very desirable that there should be one sanitary inspector for the whole county.

On a division, Lord Younger's amendment was carried by 33 votes to 20.

The report stage of the Bill was concluded.

TUESDAY, APRIL 23RD.

Qualifications of Chemists.

Viscount GAGE, on behalf of Lord DESBOROUGH, introduced a Bill to enable the Council of the Pharmaceutical Society of Great Britain to make by-laws providing for the registration without examination of persons desiring to be registered as pharmaceutical chemists in Northern Ireland.

The Bill was read a first time.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 17TH.

Small-pox on the s.s. "Tuscania."

Mr. JOHNSTON asked the Secretary of State for Scotland whether he was in a position to make any statement regarding the transfer of an engineer and of foodstuffs from the s.s. *Tuscania* to other ships at the port of Glasgow before the s.s. *Tuscania* was fumigated or disinfected after an outbreak of small-pox.—Sir J. GILMOUR replied: The s.s. *Tuscania* has been dealt with by the medical authorities of the Port of Glasgow in a manner authorised by the International Sanitary Convention of 1926, which was ratified by this country last year. Two engineers and some frozen fowls and frozen ducks were transferred from the *Tuscania* to the s.s. *Caledonia* before fumigation or disinfection had been carried out. The doctor and the purser of the *Caledonia* were notified that the engineers and foodstuffs were from the *Tuscania*. In terms of the International Sanitary Convention, the medical officer of health of Glasgow had no power to prevent the transfer to another vessel of the engineers, who were not suffering from small-pox, or of the foodstuffs, even if he had thought it desirable to do so. So far as is known, no other foodstuffs were transferred from the *Tuscania* to the *Caledonia* or any other ship. I am satisfied not only that the measures taken by the medical authorities of Glasgow are in accordance with the Convention, but also that they are all that could reasonably be done to prevent the spread of infection.

Vaccination Regulations at French Ports.

Mr. RAMSAY MACDONALD asked the Secretary of State for Foreign Affairs whether his attention had been drawn to the fact that all passengers from Great Britain, India, and certain other places were to be refused permission to land at French ports unless they could satisfy the French local medical officers of health that they had been vaccinated within the last two months; and whether he had any statement to make on the subject.—Sir AUSTEN CHAMBERLAIN replied: Immediately the new regulations were brought to their notice His Majesty's Government put themselves in communication with the French Government. I understand that the matter was considered this morning at a meeting of the Council of Ministers. Up to now I have received no official reply to the inquiries which I caused to be made, but the press this afternoon announce that at their meeting the Council of Ministers decided provisionally to suspend the Order and to arrange for a meeting between the French and English health authorities so that the two countries can act in common in taking whatever precautions may be deemed necessary. I am informed that the Southern Railway have issued a statement to the effect that vaccination certificates are not necessary for travellers to France.

THURSDAY, APRIL 18TH.

Sulphur Fumes from Electricity Plants.

Viscount SANDON asked the Minister of Transport whether he would immediately refer the question of the complete elimination of sulphur fumes from the workings of electricity generating plants to some body for scientific investigation and research; and whether, in the meantime, he would insist on sites for such purposes being chosen with full regard to the public interest, especially in the case of Battersea, in view of the effect of such fumes on the fabric of the Houses of Parliament.—Colonel W. ASHLEY replied: In approving sites for power stations regard is, of course, had to the public interest and opportunity is given for the hearing of any representations made, and no site in the County of London can be approved by the Electricity Commission without the consent of the Commissioners of Works unless the authority of Parliament has been obtained. When consent was given to the erection of the Battersea Power Station which is now under construction an obligation was placed upon the London Power Company to take the best known precautions for the due consumption of smoke, and for preventing, so far as reasonably practicable, the evolution of oxides of sulphur. I am assured by the Electricity Commissioners that in this modern power station effective steps can and will be taken to prevent the emission of grit and smoke. I am also informed that, with a view to compliance with their obligation, the company have been employing research chemists to work on the problem of the elimination of sulphur fumes, and have stated that satisfactory results have already been obtained in laboratory experiments. In view, however, of the public interests involved, the Electricity Commissioners, with my approval, have asked the Government chemist to examine these results and to keep in close touch with the progress of the company's investigation. In conjunction with the Department of Scientific and Industrial Research, he will advise the First Commissioner of Works and the Electricity Commissioners as to the efficiency of the measures proposed to be adopted to comply with the conditions on which consent has been given to the erection of the new station. The Ministers concerned with the various aspects of the question will remain in consultation with one another and watch it closely.

League of Nations and Radium Supplies.

Lieut.-Commander KENWORTHY asked the Prime Minister whether His Majesty's Government had under consideration proposals for international action through the League of Nations for the control of the available supplies of radium and their price; and, if not, whether any other proposals to this end were under consideration.—Mr. CHAMBERLAIN (Minister of Health) replied: As was stated in reply to Dr. Vernon Davies last Tuesday, the Government propose to establish an organisation, one of whose functions will be to act as an agency for the purchase of radium for medical use in this country or for Dominion or Colonial Governments. Until this organisation has been established and experience has shown how far it meets the needs of the situation, it would be premature to consider international action.

Lieut.-Commander KENWORTHY: As the question of international action is not dealt with in the Report, will the right hon. gentleman communicate with the Secretary of State for Foreign Affairs to see whether consultations can take place between the Governments concerned to prevent an unholy scramble for the available supply?

Mr. CHAMBERLAIN: I think it would be better to defer action on that point until we have this new organisation set up which I do not expect will take very long, and then perhaps we shall see.

Lieut.-Commander KENWORTHY: I do not cavil at what the right hon. gentleman says, but is he aware that the question of international action is not dealt with at all in the Report, and is that under the consideration of the Government?

Mr. CHAMBERLAIN: So far as I recollect, there is no question of international action mentioned in the Report of the Committee, but I think that the immediate question for this country is whether we can obtain the supplies that we require for ourselves at a reasonable price, and, as I understand, we have every reason to think that that can be done.

Dr. DAVIES: Can my right hon. friend say if we shall have a chance of discussing this Report before the House rises, particularly as the Government propose to spend pound for pound for the supply of this radium?

Mr. CHAMBERLAIN: There will have to be, I suppose, a Supplementary Estimate for the amount contributed by the Government, and I think that would give an opportunity for discussing the matter.

Replying to Mr. R. MORRISON, Mr. CHAMBERLAIN said that the Committee had now finished its labours.

Injurious Effects of Cream Preservatives.

Captain STREATFEILD asked the Minister of Health whether he had any evidence to show that illness or death had resulted from the use of preservatives in cream.—Mr. CHAMBERLAIN replied: There is evidence that individuals have suffered from digestive disorders after taking boracised cream, and there are cases on record where a single dose of borax has caused death. But, apart from the general

objection to the use of preservatives in food as tending to mask the effects of dirty methods of production, the case against borax is that it is a cumulative and insidious chemical substance, the continued ingestion of which cannot fail to be injurious, in a greater or less degree, to the tissues of the body.

Hygienic Manufacture of Synthetic Cream.

Captain STREATFEILD asked the Minister of Health whether his department had taken any steps to ensure that the manufacture of synthetic cream was carried out under the same conditions of hygiene as were imposed under the regulations governing the production of natural cream.—Mr. CHAMBERLAIN replied: I have not received any reports as to the conditions of manufacture of this article, but the provisions of Section 72 of the Public Health Act, 1925, should be sufficient to ensure the observance of all necessary sanitary precautions.

Mental Deficiency Committee's Report.

Lieut.-Commander KENWORTHY asked the Minister of Health whether, having regard to the fact that local authorities would be submitting, as part of their schemes under the Local Government Act, their proposed arrangements for the care of mentally defective persons, he would take steps to see that the guidance which the report of the Joint Committee on Mental Deficiency would give to these local authorities should be made available for them without further delay.

Mr. MORRIS asked the Minister of Health whether he would state his decision in regard to the publication of that part of the report of the Special Committee on Mental Deficiency which related to adult defectives.

Mr. ROBERT MORRISON asked the Minister of Health whether he was aware of the decision to publish the children's section of the report of the Mental Deficiency Committee; and, in view of the anxiety amongst those interested with regard to the section of the report dealing with adults, he would state the reason for the postponement of the decision to publish.—Mr. CHAMBERLAIN replied: I am not at present in a position to add anything to the previous replies in which I have indicated that I cannot give undertakings as to the publication of any part of this report other than that which relates to children until I have had an opportunity of giving proper consideration to the matter. I am afraid that other preoccupations have prevented that opportunity from occurring.

Mr. MORRISON: In view of the fact that the conference of Poor-law Associations in connexion with this subject is to be held next week, will the right hon. gentleman consider the publication of the report, or at any rate the recommendations of the report.

Mr. CHAMBERLAIN: Clearly the recommendations are a vital part of the report. Until I have had an opportunity of considering this very long report, I cannot add anything to the answer I have given.

Mr. PETHICK-LAWRENCE: Is it not a fact that the local authorities have to put part of this into force and to prepare schemes before September, and is it right that the right hon. gentleman should leave them so little time in which to have the report before them?

Mr. CHAMBERLAIN: There is a good deal of time between now and September, and I am not at all sure what effect on the liberty of the subject the report may have.

Mr. MORRISON: Will the right hon. gentleman say definitely that the report will be published?

Mr. CHAMBERLAIN: No, I do not say that.

Dr. VERNON DAVIES: May we take it for granted that my right hon. friend will carefully study the report before arriving at a decision as to the schemes submitted by local authorities?

Mr. CHAMBERLAIN: Certainly.

Medical Officials on Local Authorities.

Sir CHARLES TREVELYAN asked the Minister of Health whether, where the powers or duties of a board of guardians were transferred to a city or county council, a councillor who was holding a position such as that of doctor or public vaccinator under the transferred board would be compelled to resign his position as councillor if he was continued in his position under the new authority.—Mr. CHAMBERLAIN replied: I am advised that a person who, after April 1st, 1930, holds such a position as that of district medical officer or public vaccinator under a county or county borough council, will be disqualified from being a member of the council.

Dental Service in Welsh Schools.

Sir ROBERT THOMAS asked the President of the Board of Education whether there were in Wales any entire counties or any other extensive areas, the education authorities of which provided no dental service in the schools; and, if so, whether he had any statistics of mortality, absenteeism, or other data showing how juvenile health in these counties compared with that prevailing in the counties which had a dental service.—Lord EUSTACE PERCY replied: The three education authorities in Wales which at present make no provision for dental treatment are Cardiganshire, Carmarthen Borough, and Pembroke Borough. As regards the second part of the question, the hon. baronet will appreciate that the general health or mortality of school-children and their regularity of attendance at school are affected by a variety of causes, not readily separable.

Regulation of Nursing Homes.

Sir ROBERT THOMAS asked the Minister of Health the number of private nursing homes in London, in the provinces, and in Wales, respectively; what were the regulations for the inspection and approval of these institutions by the local health authority prior to the admission of patients and subsequently; and how many inspections were carried out in each of the three groups mentioned above during the last 12 months to any convenient recent date.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: The Nursing Homes Registration Act, 1927, came into operation on July 1st, 1928. Medical officers of health have been asked to include statistics of homes registered under the Act in their annual reports for 1928, but these reports are not yet available. Premises within the scope of the Act are subject to the provisions of the Act and of by-laws made under it by local supervising authorities. These authorities are empowered to inspect nursing homes under Section 5 of the Act, but my right hon. friend has no detailed information as to their exercise of this power.

Small-pox on the s.s. "Tuscania."

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of cases of small-pox that had occurred to date from the s.s. *Tuscania*; the number of these that had occurred since the official statement was issued on April 12th; the number that had died; the vaccination history of those who had died; whether any cases had occurred from contact with passengers or crew; and whether all passengers and crew were under observation and had been offered vaccination.—Mr. CHAMBERLAIN replied: The number of cases of small-pox which have occurred among the 1598 persons (passengers and crew) of the *Tuscania* is 45, which is ten more than the figure of 35 announced on April 13th. There have been seven deaths. The vaccination history of the patient who died, and of the other patients, is not yet available. All the patients notified have been isolated in hospital, and all the contacts are being kept under supervision. I have no information at present that any persons, other than those who were on board this ship, have contracted small-pox from contact with the passengers and crew. I am glad of this opportunity to say that the rigorous action which has been taken in this country to prevent the spread of small-pox from this vessel appears to have proved effectual. As the ship arrived here 17 days ago, any serious risk of a widespread outbreak of the disease should now be at an end, even though it is possible that some secondary cases may arise. It is scarcely necessary for me to add that for the community in general facilities are always available for free vaccination, which is the best safeguard against any risk of infection.

Lieut.-Colonel FREMANTLE asked whether the vaccination history of those who had died would be available in due course?

Mr. CHAMBERLAIN: Yes, Sir, I hope to be able to get it, and I will convey the information to my hon. and gallant friend.

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of cases of small-pox that had occurred amongst passengers and crew of the s.s. *Mashobra*, shortly due at Southampton from Bombay; what number of passengers landed at Marseilles for England; and what steps were being taken to prevent the introduction of small-pox through them into this country.—Mr. CHAMBERLAIN replied: It is not yet known whether there has been any small-pox on board this vessel, but all precautions are being taken and she will be closely inspected at Plymouth, her first port of arrival. I am informed that 31 of her passengers were landed at Marseilles.

Small-pox in India.

Mr. VIANT asked the Under Secretary of State for India what was the latest information in his possession in regard to the prevalence of small-pox in India.—Sir G. HENNESSY, who replied, said: There is an epidemic of small-pox in Bombay City, where there were 233 cases and 130 deaths between Jan. 1st and Feb. 16th. There are no later official figures, but, according to a press report, the total number of deaths from Jan. 1st to March 18th was 368. In the whole of British India, between Jan. 1st and Feb. 16th, there were 19,529 cases and 4821 deaths, the case and mortality-rates being approximately the same as for 1928.

Vaccination and Visitors to France.

Lieut.-Colonel FREMANTLE asked the Secretary of State for Foreign Affairs if he had any information as to the

requirements with regard to vaccination of visitors proceeding from this country to France: and what steps he was taking to help them conveniently to conform to these requirements.—Mr. LOCKER-LAMPSON (Under Secretary for Foreign Affairs) replied: Since my right hon. friend dealt with this matter yesterday official confirmation has been received of the suspension of the new French vaccination regulations. Discussions with the French Government are continuing.

Lieut.-Colonel FREMANTLE: Why is it that such action should have been taken when there are at least two international bodies that deal with health matters—one at Geneva and one at Paris?

The SPEAKER: That does not arise out of the right hon. gentleman's answer.

Poison Gas in War.

Mr. WILLIAM THORNE asked the Secretary of State for Foreign Affairs if he was aware that the German Reichstag had ratified the Geneva protocol prohibiting the use of poison gas in war; and whether the British Government had ratified the protocol.—Mr. LOCKER-LAMPSON replied: The proposal of the German Government to ratify the protocol was passed by the Reichstag on March 21st, but, so far as I am aware, Germany has not yet formally ratified. The answer to the second part of the question is in the negative.

MONDAY, APRIL 22ND.

Radium Supplies.

Mr. ROBERT MORRISON asked the Prime Minister when it was proposed to launch the public appeal for funds to purchase radium; and when the precise form of the organisation to be set up would be decided.—Sir KINGSLEY WOOD replied: The Government have no information as to the date of an appeal, though they hope it will be made in the near future. The precise form of the organisation recommended by the Radium Subcommittee, and accepted in principle by the Government, is already under discussion, and will, I hope, be settled in a very short time.

Mr. MORRISON asked whether the promised statement would be published before the General Election.

Sir KINGSLEY WOOD replied that he hoped it would be published within a few days.

Dr. VERNON DAVIES: Are we to understand that the Radium Trustees are already appointed and functioning?

No reply was given to this question.

Mr. MORRISON asked the Prime Minister whether the National Radium Trustees would have power to expend any of the funds in an endeavour to discover sources of supply independent of the Belgian company.—Sir KINGSLEY WOOD replied: No, Sir. The functions of the trustees as defined in paragraph 82 of the Radium Subcommittee's report will not extend to this purpose.

Insured Persons and Dental Treatment.

Mr. SHINWELL asked the Minister of Health whether he was aware that applicants for dental treatment who were members of approved societies in the London area were being inconvenienced through delays in dealing with their claims; and if he would inquire as to how far this was due to the methods employed by regional officers and take steps to expedite decisions in such cases.—Mr. CHAMBERLAIN replied: I am aware that owing to a large and rapid increase in the number of cases referred to the regional dental staff there have been some delays of the kind suggested. Steps have been taken to deal with the position, and a considerable improvement has already been effected, the clearance of references in London itself being now up to date.

Fumes from Artificial Silk Works.

Dr. VERNON DAVIES asked the Minister of Health whether he had received any reports from his inspectors regarding the emission of fumes from artificial silk works.—Sir KINGSLEY WOOD replied: Yes, Sir. The chief alkali inspector has made a report on this subject and my right hon. friend is arranging for its publication.

TUESDAY, APRIL 23RD.

Night Telephone Calls for Medical Men.

Mr. HORE-BELISHA asked the Postmaster-General whether his attention had been called to a coroner's criticism at a Surrey inquest of the telephone service, in which he stated that it was not the first case that had come before him where an urgent summons had been sent through to the telephone exchange during the night and no reply had been received; and what steps he intended to take to render the night telephone service efficient.

Mr. ROBERT MORRISON asked the Postmaster-General whether he had held an inquiry into the alleged failure of the night telephone service to which attention was drawn at a recent inquest at Croydon; and what was the result.

Sir ROBERT THOMAS asked the Postmaster-General whether he was aware that the father of a young man taken ill recently in the early hours of the morning attempted to telephone for a doctor, but failed to get a reply from the exchange although he tried for three-quarters of an hour; that the coroner subsequently stated that this was not the first case in his experience when the exchange made no reply to an urgent night summons; and whether he would make a general statement on the question of night staffs for telephone exchanges.—Sir W. MITCHELL-THOMSON replied: I have made full inquiry into this case, and greatly regret to find that there was a failure of the night telephone service on this occasion. It has not been possible to determine the precise cause of the failure, and I can find no record of a similar case in the same locality. A system of periodical testing has been for some time in force at night telephone exchanges, and the latest records show that the average speed of answer by the operators is satisfactory. I propose to extend this testing system further, and am at present considering the best means of so doing.

Mr. HORE-BELISHA asked if the Postmaster-General was not aware that there had been very considerable and almost universal dissatisfaction with this service for a long time, and if his attention had been called to the specific complaint made by doctors, notably by the hon. secretary of the blood transfusion section of the Red Cross Society, in which allegations had been made about loss of life owing to the delays in this service; and if he was doing anything to expedite inquiries?

Sir W. MITCHELL-THOMSON: I cannot say that I have an accurate recollection of that particular complaint, but I am aware of the fact that there have been complaints. That is the reason why these tests were made. The tests showed that the average speed of answers, taken all round, was not unsatisfactory.

First-aid Appliances at Collieries.

Mr. THOMAS WILLIAMS asked the Secretary for Mines when the new regulations relating to first-aid appliances, &c., at collieries were issued; and what steps his inspectors were taking to see that such regulations were being adhered to.—Commodore H. DOUGLAS KING replied: The first-aid regulations at present in force are those of July 10th, 1913, and their observance is checked by inspections at all the collieries. The proposed new regulations on this subject are being discussed with representative bodies of the industry, and have not yet been issued.

Mortality from Influenza.

Mr. MALONE asked the Minister of Health whether his attention had been drawn to the returns of the Registrar-General showing that in the first quarter of this year the deaths recorded exceeded the births by 24,105, the deaths for the most part being due to the influenza epidemic; whether he was aware that in the Midlands in the first week of March the death-rate from influenza alone, not including derivative diseases, reached the figure of 9·67 per 1000; and whether any research into this disease had been undertaken by the Medical Research Council during the past year or was being undertaken or contemplated by the Council at the present time.—Sir KINGSLEY WOOD replied: The returns issued by the Registrar-General show that in the first quarter of this year the deaths in 107 great towns in England and Wales exceeded the births by 25,108. The deaths numbered 111,003, influenza being certified as one of the causes of death in 12,711 cases. No similar figures are yet available for the country as a whole. The death-rate from influenza quoted in the second part of the question relates only to the great towns in the Midlands. As regards the last part of the question, I am informed that the Medical Research Council are actively promoting researches into the group of diseases to which influenza is believed to belong.

International Action in Health Measures.

Sir WALTER DE FRECE asked the Minister of Health whether there existed any international machinery, and, if so, of what nature, to enable the fullest prior exchange of views between the health authorities of different countries before, by any one country, a health or sanitary ordinance was issued against the subjects of another.—Sir KINGSLEY WOOD replied: The International Sanitary Convention of 1926 defines the measures that may be taken by countries which are parties to the Convention in order to prevent the introduction and spread of certain communicable diseases. The Convention does not require that there shall be an exchange of views between the countries concerned before the restrictions authorised by the Convention are imposed.

EVELINA HOSPITAL, SOUTHWARK.—An anonymous donor has promised to build and equip a convalescent home if the hospital can collect an endowment fund within three years. As soon as £10,000 is in hand the building will be begun.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I.—W. S. Gross, Alec Lazarow, and Reginald Wear.

Part II.—N. H. Bharucha, S. J. Dikshit, D. MacD. Fraser, W. R. G. Frayne, J. B. Hartley, Helen M. Koeller, H. B. Padwick, N. A. Quraishi, A. M. Tripathi, Reginald Wear, and Charles Wroth.

UNIVERSITY OF GLASGOW.—At a graduation ceremony on April 20th the following degrees were conferred:—

M.D.—*Ashie Main, *A. S. Strachan, †O. H. Mayor, James Anderson, H. S. Banks, G. M. Currie, R. J. L. Fraser, Margaret B. Graham, and James Matheson.

M.B., Ch.B.—‡A. McN. Wylie, ‡A. T. Wilson, †F. B. Anderson, †T. F. Rodger, Ida E. Ashby, Peter Barr, Jean M. Barrowman, R. S. P. Begg, R. P. Boyd, W. P. Brown, A. MacL. Campbell, I. S. Campbell, D. T. Clark, W. A. Clark, J. S. Craig, Thomas Dunlop, James Fairy, Robert Forrest, Isobel C. Fraser, P. A. Gallen, W. S. Gardner, Annie R. Greig, T. McF. Haughie, D. L. Henderson, H. W. Laing, J. W. Laird, L. W. Laurenson, H. R. Leishman, D. C. Liddle, J. H. McBroom, D. R. McCalman, W. D. C. McCrorie, John McMichael, W. J. McNeish, Georgina A. McNicol, A. F. Maguire, J. L. Mayer, T. R. Murray, A. J. Nairn, Mary S. Nicholson, J. P. O'Hear, Jean B. Parker, Ellen J. C. Ross (Mrs. Campbell), M. M. Scott, J. G. Slimon, William Smith, James Stewart, James Taylor, H. R. Weir, and H. Wyers.

* With high commendation. † With commendation.
‡ With honours.

The Bellahouston Gold Medal for eminent merit in M.D. Thesis was awarded to Dr. Ralph P. Smith (in absentia); the Straits Settlements Gold Medal for M.D. Thesis on a subject in connexion with Tropical Medicine or Tropical Hygiene to Dr. J. W. Graham (in absentia): the Macewen Medal in Surgery to Dr. J. S. M. Robertson; the Captain H. S. Rankin, V.C., Memorial Prize for Pathology to W. S. Mack; and the Macleod Gold Medal in Surgery to Jean G. P. Stephen.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR CONJOINT DIPLOMA.

M. E. Tiruchelvam, M. U. Hayat, Mary E. J. Magee, D. C. Dewar, K. R. L. Evans, Samuel Schmulian, Violet D. Hunter, J. C. Baumann, M. A. Yousef, C. R. Brownsberger, S. S. Nagi, S. K. Mitra, Anna N. Edward, C. H. Lovell, S. H. Al-Juniedi, Ivor Campbell, Mahmud Rafant, Anna G. McGregor, and B. C. Guha.

POST-GRADUATE COURSES ON TUBERCULOSIS.—The Joint Tuberculosis Council announces that a post-graduate course will be held in Paris from May 10th to 18th at the Clinique de la Tuberculose, Hôpital Laënnec, 42, rue de Sèvres. Visits have been arranged to institutions both in Paris and elsewhere. Most of the lectures will be given in English, the others being translated immediately. The Minister of Health has approved the course as ranking for grant, and further details may be had from Dr. William Brand at The Larches, Farnham Royal, Bucks.

COMPLIMENTARY DINNER TO LORD MOYNIHAN.—On April 19th Lord and Lady Moynihan were entertained to dinner at Leeds by the University of London Medical Graduates Society, in honour of Lord Moynihan's elevation to the peerage. Sir StClair Thomson, President of the society, who was in the chair, spoke of Lord Moynihan as the teacher and inspirer of the young surgeon, always ready to show the minute details of his wonderful craftsmanship. The profession was under a real and deep obligation to him, and this not only because he encouraged others to aspire to a great tradition, but because of the charm of his culture and the width of his interests which had helped to raise the professional status throughout the world. Lord Moynihan, in the course of his reply, said that the University of London in his day was not a University at all in the strict sense, but merely an external examining body. In his view a University was not primarily a place at which to acquire knowledge, though this was often regarded as its chief function. Much more vital was the impact of mind upon mind among undergraduates, the collision of differing temperaments, and the moulding of a shapeless mass into something capable of being recognised as a crystal of many facets. Speaking of his peerage, Lord Moynihan said he had been overwhelmed by the friendliness shown to him by people all over the world. Dr. Rhoda Adamson, of Leeds, proposed the toast of Lady Moynihan, which was heartily honoured by the company.

The gathering included representatives from no less than 12 cities and towns.

UNIVERSITY OF LONDON.—Dr. S. J. Cowell, Professor of Dietetics in the University, will deliver his inaugural lecture in the Governors' Hall at St. Thomas's Hospital, at 5 P.M., on Thursday, May 2nd. His subject will be Modern Conceptions of Nutrition: the Complete Diet. Sir Arthur Stanley will preside.

ROYAL FREE HOSPITAL.—On Tuesday next, April 30th, at 2.30 P.M., the Prince of Wales will lay the foundation-stone of the Eastman Dental Clinic. The Prime Minister will be among the speakers.

A TOUR IN CZECHO-SLOVAKIA.—The Mon Voyage Travel Agency will hold its third medical tour in Czecho-Slovakia from May 18th to 27th, visits being paid to Franzensbad, Marienbad, Carlsbad, Jachymov, Prague, Macocha, Pistany, and other places. Further information may be had from the agency at 9, rue de la Michodière Paris, II.

INDIAN MEDICAL SERVICE DINNER FUND.—The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, Piccadilly-circus, London, on Wednesday, June 19th, at 7.15 P.M. Lieut.-Colonel D. G. Crawford, "the Historian of the Service," has been invited to take the chair. Tickets and all particulars may be had from the joint hon. secretary, Sir Thomas Carey Evans, 31, Wimpole-street, W. 1.

PARKES MEMORIAL PRIZE.—This prize, consisting of 75 guineas and a gold medal, has been awarded for 1928 to Major Alexander Hood, R.A.M.C. The essay submitted by Surgeon-Commander F. Lewis Smith, R.N., was highly commended. The subject of the next competition, particulars of which will be found in our advertisement columns, is the Cause and Means of Prevention of Tonsillitis, with special reference to Naval and Military Service.

ALEXANDER MEMORIAL PRIZE.—The prize of £50 and the gold medal of the Alexander Memorial Fund for 1928 has been awarded to Major John Hare, R.A.M.C. The essay submitted by Major W. M. E. Snodgrass, R.A.M.C., was highly commended. The subject for the next competition is Functional Nervous Disorders as Affecting Military Service. Particulars will be found in our advertisement columns.

SCOTTISH VOLUNTARY HOSPITALS COMMITTEE.—The Secretary of State for Scotland has appointed a committee, consisting of Lord Mackenzie (chairman), Mr. C. F. Henderson, Provost Alexander M. MacEwen, Mr. James Macfarlane, Dr. D. J. MacIntosh, Major-General James Thomson, A.M.S. (ret.), Mr. James Thomson, and Sir David Wallace, F.R.C.S., to be, until March 31st, 1932, "the Central Liaison Committee for Voluntary Hospitals in Scotland to act in liaison between the Department of Health and the Regional Committees of Voluntary Hospitals in Scotland, to assist in keeping the department in touch with voluntary hospital opinion, and, in the development of hospital services in Scotland, to foster coöperation between the voluntary hospitals and the local authorities in each region." Mr. Niven McNicoll, of the Scottish Department of Health, will be secretary.

CONGRESS OF MILITARY MEDICINE IN LONDON.—The Fifth International Congress of Military Medicine and Pharmacy will be held from May 6th to 11th at the London premises of the British Medical Association, the British Dental Association, the Pharmaceutical Society of Great Britain, and elsewhere. Some 800 foreign delegates and members will attend, the total membership being about 1100. The membership list is now closed. The meetings will be inaugurated by Sir Laming Worthington Evans, Secretary of State for War, who will also open the exhibition which is being held at the B.M.A. house in connexion with the Congress. Among the subjects to be discussed by the Congress are: (1) the evacuation of sick and wounded by air and water; (2) tropical fevers of short duration; (3) injuries to blood-vessels and their sequelæ; (4) physical and chemical analysis of the glass and rubber articles employed by the medical services; (5) the standard of dental and physical fitness in the various military services. Official visits are being arranged to Aldershot, Portsmouth, and Halton. The Prince of Wales will receive the principal official delegates, and an official dinner will be given to these delegates, followed by a reception at Lancaster House, for all members of the Congress. A banquet will be given by the Lord Mayor and Corporation of the City of London, and there will also be receptions at the Royal College of Physicians, the Royal College of Surgeons, the Royal Army Medical College, and the Wellcome Historical Medical Museum. The Society of Apothecaries, the British Dental Association, and the Pharmaceutical Society are among other bodies which have arranged to entertain representatives.

Mr. Paul Bernard Roth has resigned his post as orthopædic surgeon to the London Homœopathic Hospital, while retaining his appointments elsewhere.

MANCHESTER AND DISTRICT RADIUM INSTITUTE.—During the past year this Institute's beds have been kept fully occupied, though owing to the greater length of the treatment the number of in-patients was only 374, as compared with 566 in 1927. The number of out-patients has risen to 7438, and there has been a marked increase in the demand for the radium treatment of cancer. The waiting-list has grown steadily, and treatment has had to be refused to many would-be patients. Dr. G. E. Birkett, honorary radiologist to the Institute, says in the annual report that concentration is being directed to the treatment of, and results of, carcinoma of the mouth and tongue. So far, during the last three years 250 cases of this type have been treated. Unless more radium is available, however, further advances will not be made. Limited facilities are the reason why so few cases of carcinoma of the breast have been dealt with. At the annual meeting on April 11th it was stated that, provided certain difficulties were overcome, in all probability there would in the near future be an amalgamation of the Institute with the Cancer Hospital, with a new hospital on a convenient site, complete with every modern convenience, and with a special annexe for the storage of radium and research work.

ROYAL MEDICAL BENEVOLENT FUND.—Sir Thomas Barlow, F.R.S., the President, took the chair at the ninety-third annual meeting of this Fund on April 18th. It was reported that the past year had been very successful, the number of new subscribers testifying to an awakened interest among members of the profession. The subscriptions and donations totalled £8623, compared with £7590 in 1927, the sum of £1667 being received as a result of the coöperation of the British Medical Association. Despite the increased income, however, the committee regrets that the amount of the grants made was often insufficient to meet the needs of the cases relieved. Thus the maximum annual grant that could be made to an entirely destitute widow was only £36, and appeals had often to be made to other charities to coöperate with the Fund in helping dependants of medical practitioners. Increased subscriptions and new subscribers were therefore needed, and for various reasons it would be a help to the Fund if subscribers would send their contributions during the first quarter of the year rather than later. The number of grants made in 1928 was 485, amounting to £8772, and many of the cases were very distressing. About £500 was spent on the education of orphans. A fair response was received to the appeal for contributions towards children's summer holidays, and 333 Christmas gifts were made, amounting in all to £500, together with £100 for coal. The sum paid in annuities was £4813, and owing to a legacy it had been possible to give six Alexander Lawrence annuities of £100 each. The number of annuitants of the Fund was 179. Among legacies received during the year was one of £5000 from the late Prof. Thelwall Thomas.

The officers of the Society elected for the coming year included Sir Thomas Barlow, President; Sir Charters Symonds, hon. treasurer; and Sir Percy Sargent and Mr. R. M. Handfield-Jones, hon. secretaries.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, May 2nd.—4 P.M., J. S. Haldane, W. Hancock, and A. G. R. Whitehouse: The Loss of Water and Salts though the Skin, and the corresponding Physiological Adjustments. Dr. F. H. A. Marshall and J. Hammond: Œstrus and Pseudo-Pregnancy in the Ferret. R. G. Canti and F. G. Spear: The Effect of Gamma Irradiation on Cell Division in Tissue Culture in vitro. (Communicated by Sir Frederick Andrewes. R. B. Bourdillon, C. Fischmann, R. G. C. Jenkins, and T. A. Webster: The Absorption Spectrum of Vitamin D. (Communicated by Dr. H. H. Dale.)—*The following papers will be read in title only:* G. E. Briggs: Experimental Researches on Vegetable Assimilation and Respiration. XX. (Communicated by F. F. Blackman.) R. J. Lythgoe and K. Tansley: The Relation of the Critical Frequency of Flicker to the Adaptation of the Eye. (Communicated by Sir John Parsons.) R. Hill: Reduced Hæmatin and Hæmochromogen. (Communicated by Sir Frederick Hopkins.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, May 1st.—5 P.M., HISTORY OF MEDICINE: Annual General Meeting. Election of Officers and Council. Exhibit: Statuette of Imhotep, an ancient Egyptian deity of medicine, and a rare scarab associated with him: lent for exhibition by Dr. Hurry. Paper: Sir William Hale-White: The Letters of Dr. William Withering. 8.30 P.M., SURGERY. Annual General Meeting: Election of Officers and Council. SURGERY and MEDICINE to follow the Annual Meeting of the Section of Surgery. Discussion on the Indications for and the Results of Splenectomy. Openers: Mr. A. J. Walton (Surgery); and Dr. Hugh Thursfield (Medicine).

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.). Annual General Meeting: Election of Officers and Council. Subject for Discussion: The Treatment of Chronic Deafness. Short Papers: Dr. Dan McKenzie: The Symptomatic Treatment of Deafness. Mr. Harold Kisch: Chronic Deafness: its Treatment and Prevention. Mr. Thacker Neville: Chronic Deafness. Mr. G. Seccombe Hett and Mr. A. G. Wells: Ionisation as a Treatment for Middle-ear Suppuration. Cases and Specimens will be shown by Mr. Somerville Hastings, Mr. E. Watson-Williams, and others. 5 P.M., LARYNGOLOGY: (Cases at 4 P.M.). Annual General Meeting: Election of Officers and Council. Paper: Mr. F. J. Cleminson: Treatment of Carcinoma of the Œsophagus by Radium. Cases and Specimens will be shown by Mr. Somerville Hastings, Dr. D. R. Paterson, Mr. M. Vlasto Mr Frank Rose, Dr. P. Watson-Williams, and Mr. A. J. Wright. 8.30 P.M., ANÆSTHETICS. Annual General Meeting: Election of Officers and Council. Short Paper: Dr. H. Sington: Pre-medication by Paraldehyde in Children.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, May 3rd.—8.30 P.M., Mr. Frank Kidd: Vasostomy and its Place in the Treatment of Early Urethritis. A Discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, April 30th.—5 P.M., Dr. F. M. R. Walshe: The Physiological Analysis of Some Clinically Observed Disorders of Movement. (First Oliver-Sharpey Lecture).

THURSDAY, May 2nd.—5 P.M. (Second Oliver-Sharpey Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 29th, to SATURDAY, May 5th.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Tues., at 2 P.M., Dr. H. V. Morlock: The Early Infiltration and its Relation to the Development of Phthisis.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Tues., 2.15 P.M., Mr. George Waugh (Wards).—The above are free.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, W.C. Tues. and Thurs., 2 P.M., Lecture-demonstration.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E., Special Course in Medicine, Surgery and Gynæcology.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C., Wed., Demonstration on Electrotherapeutic Methods and Apparatus.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W.—Daily Lecture-demonstrations illustrated by cases at 5 P.M.—MAUDSLEY HOSPITAL, Denmark Hill, S.E., Four weeks special course in Psychological Medicine.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn road, W.C., Intensive Course.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, April 29th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Ward Visit. 2 P.M., Mr. Addison, Operations. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY, May 1st.—10 A.M., Dr. Owen: Children's Out-patient Department. 2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Out-patient Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Ward Visit. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patient Department. 10 A.M., Resident Assistant Surgeon: Ward Visit. Medical and Surgical Out-patients at 2 P.M., daily. Operations. Special Departments daily 10 A.M., to 5 P.M., Saturdays, 10 A.M. to 1 P.M. Special Classes in Anæsthetics and Operative Surgery.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, April 29th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

UNIVERSITY COLLEGE, Gower-street, London.
MONDAY, April 29th, and the following TUESDAY and WEDNESDAY.—5.15 P.M., Prof. E. Mellanby: Drug-like Actions of Some Food Constituents. (Public Lectures).
THURSDAY, May 2nd.—5 P.M., Mr. R. J. Lythgoe: Special Sense Physiology. (First of six lectures.)
FRIDAY.—4 P.M., Prof. A. J. Hall: Some of the Sequels of Epidemic Encephalitis (Lethargica). (First of two public lectures.)

ST. THOMAS'S HOSPITAL, Albert Embankment, Westminster Bridge, S.E.
THURSDAY, May 2nd.—5 P.M., Prof. S. J. Cowell: Dietetics. (First of six lectures.)

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
WEDNESDAY, May 1st.—3.15 P.M., (at the Royal Chest Hospital, City-road), Dr. F. E. Saxby Willis: Thoracic Pain.

ROYAL DENTAL HOSPITAL POST-GRADUATE LECTURES.
WEDNESDAY, May 1st.—6 P.M., Dr. E. W. Fish: The Reaction of the Pulp and Dentine to Dental Caries.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
THURSDAY, May 2nd.—5 P.M., Dr. A. M. H. Gray: The Sacroids and Lupus Pernio.
FRIDAY.—5 P.M., Dr. A. C. Roxburgh: Differential Diagnosis of Some Common Skin Diseases.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, April 30th.—4.15 P.M., Mr. J. Morley: The Pain Associated with Gall-stones.
FRIDAY, May 3rd.—4.15 P.M., Dr. E. B. Leech: Demonstration of Medical Cases.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.
THURSDAY, May 2nd.—4.15 P.M., Mr. E. E. Hughes: Pyelitis.

Appointments.

DUNSCOMBE, N. D., M.B., B.Chir. Camb., D.P.H., has been appointed Medical Officer of Health, Bexhill.
FERGUSON, J., M.B., B.Ch. R.U.I., D.P.H., County Medical Officer of Health for Surrey.
Certifying Surgeons under the Factory and Workshop Acts: ANDERSON, H. P., M.B., Ch.B. Edin. (Kinross); SUTHERLAND, T. R., L.R.C.P. Lond., M.R.C.S. (Tredegar); TULLIS, G. D. E., M.B., Ch.B. Edin. (Hereford); and WHITBY, J. M. F., L.M.S.S.A. Lond. (Littleport, Cambs.)

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Bedford County Hospital.—Asst. H.S. At rate of £130.
Bedfordshire Sanatorium, near Bedford.—Res. Asst. M.O. £450.
Birkenhead County Borough.—Asst. M.O. £450.
Birmingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Birmingham and Midland Eye Hospital, Church-street.—Surgical Registrar.
Blackburn and East Lancashire Royal Infirmary.—4th H.S. At rate of £130.
Bolingbroke Hospital, Wandsworth Common, S.W.—Clin. Asst. to Ear, Nose and Throat Dept. £75.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Brighton, Sussex Eye Hospital.—Hon. Consulting Physician and Neurologist. Hon. Consulting Rhinologist. Also Hon. Consulting Dentist.
Bristol Education Committee.—Asst. School M.O. £600.
Bristol Royal Infirmary.—Hon. Med. Reg. Also Hon. Reg. to Ear, Nose and Throat Dept.
Bristol University.—Chair of Physiology.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Canterbury, Kent and Canterbury Hospital.—Two Res. M.O.'s Each £125.
Cardiff, King Edward VII. Welsh National Memorial Association.—Area Asst. Tuber. Physician. £600.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Second Res. H.S. £75.
City of London Maternity Hospital, City-road, E.C.—Asst. Obstetric Surgeon.
Colchester, Essex County Hospital.—Asst. H.S. and Registrar. £120.
Derby Guardians' Institution and Infirmary.—Second Res. M.O. £250.
East Ham County Borough.—Asst. M.O. £600.
East London Hospital for Children, &c., Shadwell, E.—Res. H.S. Also Res. Cas. O. Each at rate of £125.
Edinburgh Royal Infirmary.—Hon. Clinical Assistants.
Folkestone, Borough of.—Asst. M.O.H. £600.
Glasgow, Victoria Infirmary.—Superintendent. £1000.
Guildford, Royal Surrey County Hospital.—H.S. At rate of £150.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Hull Royal Infirmary.—Cas. H.S. At rate of £130.
Kingston-upon-Hull City and County of.—Asst. M.O.H. £600.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Leeds, Tuberculosis Sanatorium, Killingbeck.—Asst. Res. M.O. £250.
Liverpool Port Sanitary Authority.—Asst. Port M.O. £700.
London Hospital, Whitechapel, E.—Gynæcological First Asst. and Obstetric Tutor. £300.
London Female Lock Hospital, Harrow-road, W.—Hon. Obstet. Surg.
London Homœopathic Hospital, Great Ormond-street, and Queen-square, Bloomsbury, W.C.—Res. M.O. £100.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 guineas.
Manchester Royal Infirmary.—First Asst. in Clinical Laboratory £350. Also Dickinson Research Travelling Scholarship in Medicine, £300. Also Pathology Scholarship. £75.
New End Hospital, Hampstead, N.W.—Jun. Res. Asst. M.O. At rate of £200.
Norwich City Mental Hospital.—Jun. Asst. M.O. £500.
Norwich, Norfolk and Norwich Hospital.—H.P. Also Cas. O. and H.S. Each £120.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Plumstead and District Hospital, Plumstead High-street, S.E.—Third Asst. M.O. £300.
Royal Army Medical College, Grosvenor-road, S.W.—Parkes Memorial Prize. £75. Also Alexander Memorial Prize. £50.
Royal Chest Hospital, City-road, E.C.—Res. M.O. At rate of £150. Also H.P. At rate of £100.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—H.S. Also Asst. H.S. At rate of £150 and £100 respectively.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Morbid Anatomist and Curator of Museum. £300.
Royal London Ophthalmic Hospital, City-road, E.C.—Out-patient Officer. £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Surgical Registrar. At rate of £105.
St. Bartholomew's Medical College.—Senior Curator of Museum.
St. Helens County Borough.—Asst. M.O.H. £450.
St. John's Hospital, Lewisham, S.E.—Sen. Res. M.O. £250.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
University of London.—University Chair of Anatomy. £1000.
Wakefield, Clayton Hospital.—H.S. £150.
Walsall General Hospital.—Jun. H.S. At rate of £100. Also H.S. At rate of £125.
Wolverhampton, Royal Hospital.—Res. M.O. At rate of £150.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—H.S. At rate of £125.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Tipton (Staffs), and Leeds North (Yorks.).

Births, Marriages, and Deaths.

BIRTHS.

GARROW.—On April 19th, at Fernbrae, Dundee, the wife of Dr. R. P. Garrow, Great North-road, Highgate, N., of a son.
HORDER.—On April 20th, at Ben-Lui, Boyne-park, Tunbridge Wells, the wife of Cecil A. Horder, M.B., F.R.C.S., of a son.
NEWNHAM.—On April 17th, at a nursing home, Crayford, Kent, the wife of Dr. F. M. Newnham, of a son.
PAYNE.—On April 16th, the wife of Reginald T. Payne, F.R.C.S., of Abbey Court, St. John's Wood, of a son.
SELOUS.—On April 16th, at Tunbridge Wells, the wife of Cuthbert F. Selous, M.B., of a son.
TINCKER.—On April 17th, at Painswick, Glos., the wife of Surgeon-Lieutenant R. W. Holden Tincker, R.N.V.R., of a daughter.

MARRIAGES.

HOLLINS—STADDON.—On April 16th, at St. John's Church, Ipswich, Arthur Sturgess Hollins, B.A., M.R.C.P., of Thames Ditton, to Joan Staddon, M.R.C.S., of Ipswich.
SUMMERS—BATES.—On April 16th, at SS. Nicholas and Faith Church, Saltash, Ralph Donald Summers, L.R.C.P., M.R.C.S., to Florence Mathilde, daughter of Mr. and Mrs. W. Bates, of Port View, Saltash.

DEATHS.

AHRENS.—On April 16th, Henry Augustus Ahrens, M.R.C.S., L.R.C.P., late Surgeon-Major, Hants Carabineers, of Grangethorpe Hospital, Manchester, aged 59 years.
BRADNACK.—On April 21st, 1929, Gerald A. A. Bradnack, M.R.C.S., L.R.C.P., beloved husband of Nora Winifred Bradnack, M.B., B.S. (née Kirk). At Barton-on-Humber. Aged 33.
CAPON.—On April 20th, the beloved wife for 50 years of Herbert J. Capon, M.D., at Pine View, Sonning Common, Reading.
DAWES.—On April 18th, Joseph William Dawes, M.B., C.M., of Denbigh House, Longton, aged 65 years.
FARRAR.—On April 17th, at Hillmorton Paddox, Rugby, John Frederick Farrar, M.R.C.S. Eng., L.R.C.P. Lond., late of Putney, aged 74.
LAWRENCE.—On April 15th, at Hoath Cottage, Hadlow, Kent, Dr. H. M. Lawrence, aged 84.
RUTHERFURD.—At 20, Bute-gardens, Glasgow, W.2, on 14th April, 1929, Henry Rutherfurd, M.A., M.B., C.M., F.R.F.P.S.G.
SCHOFIELD.—On April 20th, at Bursledon Hotel, East Cliff, Bournemouth, Alfred Taylor Schofield, M.D., M.R.C.S., late of Harley-street, in his 83rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SMALL-POX DIAGNOSIS.

By W. McConnel Wanklyn, B.A. Camb., M.R.C.S. Eng., D.P.H.

When by the Act of 1898 Parliament in its wisdom virtually made vaccination optional, and confirmed that measure by the Act of 1907, the people of this country in effect elected to discontinue protecting themselves against small-pox by the method of each member of the community rendering himself individually immune. Without realising it, they decided to substitute another method of protection—namely, the formation of an elaborate and efficient organisation for the purpose in the first place of instantly recognising small-pox, and then of rapidly suppressing it. The cutting edge of this organisation is the accurate diagnosis of small-pox, which the administrative measures follow. It is clear that everything turns on the sharpness of this cutting edge.

A Certain Means of Recognising Small-pox.

Happily for the country, before its renunciation of general vaccination, material for the new method of protection had been in preparation owing to the work of the late Dr. T. F. Ricketts, which began in 1891. During this decade he forged against small-pox a weapon happily described by himself as "the brand Excalibur"; it was a rapid and certain means of recognising small-pox, with the outstanding merit that it was readily capable of being communicated to others. Although finished skill in the use of this, as of any other weapon, can only come from natural talent or long training, it is a fact that by its use cases of small-pox have even been recognised on the first day of the rash by members of the medical profession who had never previously seen a case of the disease. It is something for which humanity may be thankful that one of the worst of infectious plagues betrays itself early by a characteristic skin eruption which it is not—to use the phrasing of the National Insurance Act—beyond the ability of the practitioner of ordinary competence and skill to discover.

Tested on a large scale in 1902, the method of Ricketts enabled all but two of 8000 cases certified as small-pox to be correctly classified: of cases so examined, about 600 were pronounced to be not small-pox and 7400 to be small-pox. This was done rapidly and at high pressure, by members of a team, several of whom had had no previous knowledge of the disease. In the 600 non-small-pox cases the diagnosis proved right every time: of the 7400 cases pronounced to be small-pox, subsequent observation showed that two only were not small-pox—an error on the whole of one-fortieth of 1 per cent.

The Voluntary Service Fund.

It remained to make universally known such an invaluable method of recognising and defeating small-pox: and, accordingly, a campaign with that object has been steadily carried on during the past 28 years, with increasingly good effect. At first conducted by private individuals, this has latterly been shared by a group of voluntary workers, professional and lay, who form a nucleus known as "the Voluntary Service Fund," one of whose functions is to assist in freeing the country from small-pox. Among the main principles which actuate the Fund this comes first; that by far the strongest defence against small-pox is to attack it; not to wait for small-pox to attack us, and then to defend ourselves against it, but for ourselves to attack small-pox first, and to clear it out of the country. That is its first line of policy. Its second is educational—namely, to make the simple principles of small-pox diagnosis well known, not merely to every physician and medical officer throughout the country, but to every medical student, nurse, inspector, and intelligent layman as well. Those principles are as readily comprehended as the characters of chicken-pox. Dr. Ricketts, when called on to proceed to a case 14 miles away, used to say, "Of course, I am going up to see this case and to settle its diagnosis, but really it is not necessary. It is perfectly certain from Nurse ——'s description that the case is chicken-pox." Such a report has often been made to myself. Modern methods of small-pox diagnosis are now spreading steadily among all classes of the population; on one recent occasion the mistress of the house, in which a case of small-pox had occurred, who had gained her information from a well-known book on household medicine, was perfectly correct in her belief that she had before her a case of that disease.

The Fund (present address, 64, Great Portland-street, W. 1) has spared no efforts to continue the propagation of the ground-work principles of modern methods of small-pox diagnosis. It has met the increasing demand for handy and easily assimilated information on the subject by the publication of "The Accurate Diagnosis of Small-pox" (third edition, 1927, 6*d.*), convenient for carrying in the pocket. Public authorities, such as counties, boroughs, guardians, institutions, steamship companies and others, to the number of some hundreds, have distributed this post-graduate address to their respective medical officers.

Value of this Service.

Uniformly good reports have come in as to the value of this service, which has been found to meet the following indications:—

1. Medical practitioners have been forewarned and forearmed.

2. By these two simple measures 50 per cent. of the risk of a small-pox outbreak has been removed from a district, and that at a cost which is negligible in proportion to the risks involved. A warning is not enough. It is imperative also to forearm those who are warned. Experience shows that nearly every single small-pox outbreak in this country is due to one of the medical sentries, upon whom has been thrown the onerous duty of watching for small-pox, being outwitted by this cunning invader.

3. Medical practitioners are grateful for this counsel and help. It takes some of the weight off their shoulders: it enables them to diagnose with ease many of the simpler cases to which they may be called wherein small-pox is in question; it strengthens their position and that of the medical officer of health; it keeps the whole line of defence in touch and alert.

4. Local authorities are placed in a better position to meet public criticism as to the adequacy of their preparations beforehand against small-pox. When small-pox breaks out in a district it is noticed that public opinion asks more insistent questions than it used to ask, simply because it is better informed. To equip in this manner the whole line of medical sentries, and to keep them equipped, is the very first step in preventive preparation.

Our country stands in a very singular position in regard to small-pox. When it is realised that it is no uncommon event for one million cases to occur in any one year in the world at large (in 1918 there were 93,000 deaths from small-pox in British India alone) that infection from one or other of the innumerable foci is continually hammering at our doors: that on its arrival it finds 30 millions of people in England and Wales liable to take small-pox, the risks which we are daily running may be seen to be colossal. There is nothing whatever standing between our people and a small-pox catastrophe but the eternal vigilance of the medical profession.

About 12,000 of its members have been reached so far by the distribution of the pamphlets on diagnosis already mentioned. So far small-pox has not been noted to take hold in an area in which they have been widely issued. It is a fair inference that when all practitioners throughout the country have been so reached, one step at least will have been taken on the way towards checkmating the entry of small-pox and raising our security against its attack.

The Method in Brief.

There is here added, in brief, the method of diagnosis, commonly used by myself, stated imperatively for better effect.

Always carry the question in mind, "Can this be small-pox?", in any of its 50 or more disguises. Can it be small-pox in its pre-eruptive stage, simulating influenza, rheumatism, appendicitis? Can it be an initial rash? Can it be hæmorrhagic small-pox? Or small-pox in the stage of papule, of vesicle, of pustule, of crust, of recent scarring? Secure the very best light available. Examine the whole skin as comprehensively as possible. Postpone questions. Reply on personal first-hand observation. Set little store by comparatively valueless evidence, such as "shottiness," "umbilication," "cropping." Take a rapid observation of the whole case.

Then 1. Examine the relative distribution of the lesions. Go over the whole surface methodically. Assign a high value to this head of evidence. Compare especially the relative incidence as between face and front of trunk. Note the hands, all the flexor surfaces, the axillæ, the feet. Recall that a small-pox rash usually favours the relatively hyperæmic surfaces, and shuns the relatively protected surfaces, which are not necessarily the same in a footpad and a baby, in a scrubber and a lady of affluence. Before you give up, dot in the spots on a diagram of the figure, and count the spots of a discrete case. This heightens accuracy of observation, is an invaluable report and a convincing record. Having done this, and weighed up the value of the evidence, dismiss it temporarily from mind, and begin over again with

2. The quality of the lesions. Avoid the face at first. Choose a more protected area, such as the arm or forearm, where lesions are likely to be more typical. Examine also

the lesions on the chest and flanks. Also those on the specially irritated surfaces, as on the feet. Estimate the depth of the spots in the skin by rolling a fold of it between finger and thumb. Note the evenness and definition, or otherwise, of the outlines of the lesions; whether they are circular or not; whether they are tense or not; whether the covering envelope is substantial or not. Note this also in dealing with the milder form of small-pox. The individual lesions of small-pox may vary much in size, and be excessively minute. There occur cases in which the rash might be described as having been reduced to a miniature; but it is small-pox all the same. Presumed chicken-pox, or any rash of the first or second day should always be kept under further observation.

3. Try to estimate whether, and how rapidly, the rash has matured: that of small-pox undergoes regular development. Even at one observation it is usually possible to gain evidence of this. This evidence may be invaluable when it is otherwise difficult to reach a conclusion and no second opinion is at hand. Then place the case in observation and such isolation as is desirable; watch its development. Of itself, that may tell the whole tale.

4. Once more, start afresh. Examine the previous course of the case. Keenly sift the grain of the evidence from the chaff. Throw the latter to the wind. In estimating the value of this "history," the first in point of time, often the last in value, bear in mind the relative proportion between the stress of the onset and the quantity of the eruption.

These are the four cardinal heads under which to cross-examine a rash. Other points of varying value are the state of vaccination, and the degree of exposure to infection. This above all. Weigh the *whole* of the evidence taken together, and with the diagram. If necessary take time to consider it. Take a walk or a day to settle a decision sometimes as puzzling and as momentous as any in medicine. Keep your notes. Sign them. A useful practice is to write out a short memorandum, for personal reference, beginning, "My reasons for this decision are . . . ." Few cases of small-pox can elude scrutiny on these lines.

THE FUTURE OF MEDICAL PRACTICE.

To the Editor of THE LANCET.

SIR,—Your leading article of Jan. 5th and letters in your issues of Jan. 19th and Feb. 2nd assume only two possible organisations when looking to the future of medicine—a State service and private practice combined with the voluntary hospital system. I suggest that neither of these plans holds out much hope for the profession.

The Government (i.e., Civil Service) have tried to manage the mines and railways in the past, and have failed. Medical men who single-handed have had to deal on medical matters with the Ministry of Health or other Government departments are convinced that a State medical service is also doomed to failure.

The voluntary hospitals of the past have a wonderful record of service to the necessitous poor: they have long ceased to confine their attentions to this section of the community and to-day spend their time collecting money by wide advertisement, competitions, and other not too scrupulous methods, and at the same time compete more and more openly with the profession in taking money from those able to pay for sick attendance. The profession might be well advised gradually to withdraw their support from the voluntary hospitals. In passing it may be added that county and borough councils with their increasing number of clinics—widely advertised and supported by the rates—are competing very unfairly with private practice. It requires a united and strong profession to confine them to their proper sphere of preventive medicine.

In the scheme which follows the medical profession would control and manage their own industry. The general practitioner would be, as your leading article hopes, the backbone or keystone of the scheme. Let the country be divided into suitable areas—smaller in towns, larger in the country. The medical practitioners of each area would combine to elect a staff of consulting surgeons, physicians, oculist, aurist, and the rest. These consultants should live in their area and foster medical science there: the general practitioners would guarantee them the consulting work of the area, and in return control their public and charity appointments. A central group of consulting-rooms, operating-theatre, laboratories, X ray room, &c., with an attached nursing home would immediately be put up in each area, and later special clinics could be built for child welfare and the like, or a large hospital as the demand arose. In suitable cases the profession could take over voluntary or other hospitals already in use.

How should this be done? It is useless to expect busy practitioners to attend meetings, but in each area they could subscribe towards the part or whole time salary of a medical secretary, whose duty it would be to visit and get to know all the doctors, and in a year or so formulate a definite scheme for his area to adopt. The area secretaries should also be responsible to a controlling director chosen by the profession who would impart the necessary cohesion to the area schemes. A new branch of medical administrators would have to be trained at the various medical schools; by their sympathy and medical knowledge this group would help materially in the success of any hospitals or other undertakings started by the profession.

Finance.—A loan or debenture could be floated on the London market to finance all capital outlay required by the schemes of each area, the security being the buildings it is proposed to erect or take over and a first charge on the profits of the undertaking. Interest on the issue to be at a fixed rate. All doctors to hold a stated amount of stock, so that they may have a financial interest and stake in the success of their hospitals. The banks could be approached for loans in the early stages to secure running expenses.

Insurance.—A scheme of insurance for all salaried people and their families should be adopted, which those in a small way of business could contract into. Provided the insurance companies remembered that their first duty was to help and pay out, the scheme should prove adequate and reasonable for all sickness and accidents. Payment, whether to patients or direct to doctor, should be on a piece-work basis, and contract practice should be reduced to a minimum. All others could be treated on financial lines such as those in vogue at the Mayo Clinic.

On this plan I believe that a busy but not overworked life could be built up for all medical men and women, giving a fair return for labour done. Also we could control both the number and type of students entering the different medical schools, and gradually build up a profession of which medical men and the nation generally could be justly proud.

I am, Sir, yours faithfully,

FORWARD.

THE INCORPORATED CHIROPODIST.

MEMBERS of the Incorporated Society of Chiropodists and their friends sat down, to the number of about 180, to dinner at the Café Royal on the evening of Saturday, April 20th, the medical profession being represented not only by the Rev. A. W. Oxford, treasurer and one of the founders of the Society, but also by several well-known orthopædic surgeons and others interested in certain aspects of chiropody. The President of the Society, Mr. W. H. Taylor, in replying to a toast proposed by the Mayor of Croydon, spoke of the increasing prestige and position of the Society, which now had its own hospitals in London, Liverpool, Manchester, and Edinburgh, and was soon likely to have centres in other populous districts. The London Foot Hospital in Charlotte-street, W.1 is already, it seems, outgrowing its premises and is likely to reopen with more endowed "chairs" elsewhere in a few months' time. In responding for this hospital, Sir Henry McMahon, its chairman, put in a claim for its benefaction by the boot-makers who were responsible for most of the ills which the chiropodist was called upon to alleviate. Dr. Oxford had genially described the bootmaker as an Attila leaving a trail of misery and pain behind him on his triumphant march. Sir Edward Penton, who accepted his description as the "big noise in the boot industry," took up the challenge and spoke with pride for the bootmakers who had been the creators of chiropody and hoped finally to be its death. Allusion was made in the course of the evening to the Registration Bill which has been read a first time in the House of Lords. It does not, as was at first intended, attempt to close the profession by penalising the unqualified person, nor does it claim for the registered chiropodist the right of diagnosing maladies of the foot. But it does prescribe a standard of training and equipment which has facilitated the convention reached with the consulting medical officers of foot hospitals. This rests on the limitation of the chiropodist's knife to the structures superficial to the true dermis and on his undertaking to practise his craft with antiseptic precautions.

SUCCESS OF CONTRIBUTORY SCHEMES.—Reports of the progress of hospital contributory schemes form a record of all-round success. The Torbay scheme was formed at the beginning of April, and in the first fortnight more than 3000 members joined. In five months the Southampton and District Hospitals Association numbers 10,000 members. The Radcliffe Infirmary (Oxford) scheme now has 70,000 members, and last year £31,000 was collected. Its federated hospitals and societies number 16 in towns, 345 in villages, 400 in firms and factories, 25 in colleges and halls, and 12 in Oxford city parishes. The Harwich Hospital scheme has added 653 to its membership during the past year; the basis is 3*d.* per week for families with incomes under £350.